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ECONOMIC AFFAIRS

No. 51

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NATIONAL ECONOMIC POLICY

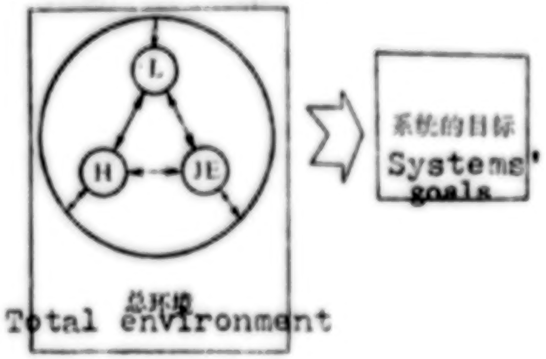
SYSTEMS ENGINEERING, THE HUMAN FACTOR DISCUSSED

Beijing JINGJI GUANLI [ECONOMIC MANAGEMENT] in Chinese No 10, 25 Oct 79 pp 43-46, 49

[Article by Xu Liancang [1776 5114 0221], Psychology Institute, Chinese Academy of Sciences: "Systems Engineering and the Human Factor"]

[Text] The rapid realization of the four modernizations will require that we not only have new inventions and creations in science and technology, but that we also have new understandings and methods in scientific management. Systems engineering is a comprehensive scientific and technical field that has been given extremely serious attention internationally during recent years. It is a method that has been found to be effective in the organization and management of large projects, the economy and enterprises. The sphere of its application is steadily expanding with the concepts and techniques of systems engineering being tried out in metropolitan construction, management of water resources, pollution control, and in education, health care, and judicature.

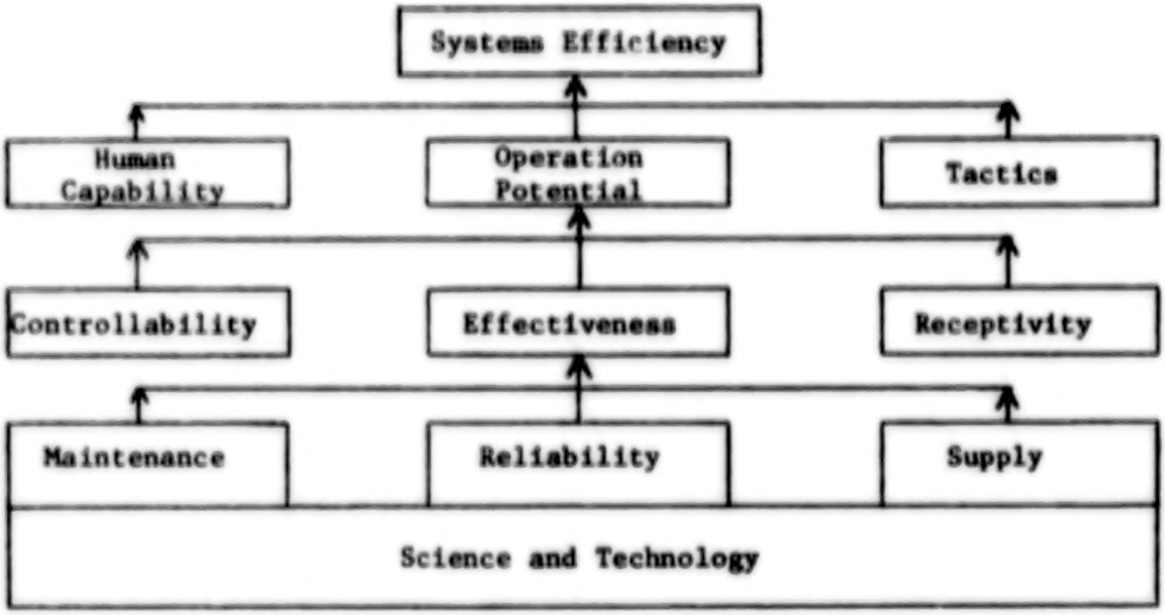
The most fundamental principle of systems engineering is a consideration of various pertinent factors and, after having taken all factors into consideration, action taken in a rational manner. Of all the so-called various factors, the most important ones are the human factors, the material factors, and the environmental factors. Sometimes these factors are combined into a diagram as follows:



Pattern of Inter-relationships in Systems Operation

L = Living Component; H = Hard Component (Machines etc.);
JE = Job Environment

This diagram can reflect in a general way the interaction of the various factors in the system and how the efficiency of the entire system is determined by the various factors. The various pertinent factors determining the efficiency of a system may be arranged in a block diagram to show in a graphic way the function of the various key factors.



Some of these factors are related to human control; some are related to the performance of machines; some are related to environmental conditions; and some are the outcome of the interaction among various factors. If we look at only the issues of machines and raw materials to the neglect of human capabilities and work methods, the optimum outcome will not be obtainable. Below we focus on the human factors in our discussion.

Human factors should be considered principally on several levels as follows:

First is anthropological characteristics. Most important is the study of body characteristics such as lengths of upper and lower limbs, angles and measurements while sitting and standing, characteristics of human fingers and strength of grip. These data are of reference value for the design of machines and the layout of work sites. We have some imported machine tools that have been designed largely according to the characteristics of the bodies of foreign workers, and female workers sometimes find difficulty in operating these machines because of their short stature, or they are unable to reach levers or wheels and thus must place a small platform on the floor to raise their stature. Because the instrument panels on some machine tools are of unsuitable dimensions, workers feel extremely tired after a day's work. When such factors are not completely taken into consideration, work efficiency frequently declines, or the number of rejects increases, or accidents may be caused. From a management standpoint, such seemingly unimportant trivialities cannot be ignored.

Second is human feelings and perceptions and the characteristics of human movements. In certain production modes, men and machines exchange information with each other. From its broad storehouse of knowledge, including all the material factors of the entire system, the machine reveals data to the operator through various display devices (such as instruments, sound signals, oscilloscopes and oscillographs, and nixie tubes). Humans receive this information through their sense of sight or hearing or even their sense of touch. After it is processed in the brain, the information is transmitted to the machine through human motion (action). These motions consist of pushing buttons or moving wheels or levels, or punching the keys of a teletype machine to feed the information into a computer. In recent years, moreover, an interworking of man and machine has taken place in which the operator can even use voice commands to give data to a machine. A problem here is the limitations of human sensory perception and actions, which when exceeded, result either in no data being received or a decline in its reliability. For example, in the case of the sense of sight, the data that can be transmitted through human reading of a linear scale with a pointer is about 3 bits (a bit is a unit of measurement for data. If one of two objects of equal probability is selected, that is 1 bit of information; if one of four objects is selected, that is 2 bits of information; if one of eight objects is selected, that is 3 bits of information, etc.) If the dimensions of the object to be identified are increased, as for example through a combination of attributes such as color, brightness, and position, then the amount of data that can be transmitted will rise to 4.6 bits. Some treatment has been given these limitations in the works of some engineering psychologists.

Realization of these limitations has caused designers to think and plan so that additional burdens will not be placed blindly upon the operator, and thus the reliability of systems work has been assured. But these problems cannot be simply regarded in a passive way; ways must be found to improve the methods by which machines present their data so as to reduce the burden on human sensory perception, thereby enlarging the amount of information that can be transmitted to humans. One way, for example, is through improvements in the design of instruments, with instruments that use number displays when quantities are to be read being most effective, while instruments that use pointers being suitable for qualitative readings. The calibrations of instruments, the configuration of needle gauges, and the style of numerals are all matters that should be meticulously studied so that operators can easily read them and remember them. As regards movements, consideration must be given to the design of control devices. Generally speaking, the design of control devices must provide for ready differentiation as, for example, in the configuration of pushbuttons with clear distinction among indicators so that mistakes will not result in faulty operation. Secondly, for every action taken there has to be corresponding feedback so that the operator will know at once the results of his operation and be able to make necessary adjustments. Thirdly, the design of control devices must suit habits, as for example, tightening or shutting off in a clockwise direction, or loosening or opening in a counter-clockwise direction. A great amount of work has been done on such matters that will serve as extremely useful data in the perfection of machinery and equipment.

Third is the characteristics of the operation of human intelligence. The above touched on sensory perception as the highway over which information is carried to humans, and movement as the channel through which humans transmit data. Between these lies processing of data by the central nervous system, and pertinent to this is consideration of human ability to observe, to learn, and to remember, to make judgments and to reason. Observation is most basic to information processing. When we separate one object out from among others and bring it into the field of consciousness, this is already a kind of basic processing of data. Further on is short-term memory. In our daily lives we all have had personal experience with being required to remember something for only a few seconds after which it has been forgotten. This kind of memory is very important in action. If certain data need be displayed on a display device for a short period of time, how much can a person remember at a time? How long can he remember it? These are questions that designers must pay attention to. Some data we keep in long-term memory, but how long does it take to "recover" it? And what factors bear on the process of "recovery"? These are also human factors that have to be considered when machinery is being designed. Under conditions of excessive stress, people may sometimes be unable to recall things they have remembered. The same is true of familiar motions. If you are familiar with a particular motion but have been required to change this motion in answer to some operating need, you can, under normal conditions, adapt quite easily to this new operating sequence, but under certain special conditions you may unconsciously revert to use of the former method of operation and thereby cause an accident. Thus, when designing new machinery it is necessary to take into consideration the former habitual reactions of workmen and the forms of their reactions. There is a term in engineering psychology: "universal dynamic pattern." This is something that designers should pay attention to.

Engineering designers have worked hard to reduce the human burden in processing data. In the flying of an airplane, for instance, there are countless instruments with ever so much data, and the pilot has to make judgements about the altitude and speed of his aircraft on the basis of the data provided by these instruments, taking controlling actions as required. This is an exceptionally complex and hectic system of information processing. As the speed of aircraft becomes greater and greater with each passing day, this difficulty also increases. Consequently, engineering designers have designed a special electronic computer to process all pertinent data, after which a simple display device shows what operations the pilot must perform; the pilot need only activate the control stick to make the instruments that show reactions of the airplane follow the instructions from the electronic computer, and once they have followed them the task is complete. In this way a computer is used to take the place of some human brain work.

In the operation of human intelligence, it is also necessary to take into consideration the organizational and driving role of human "motivations and goals." In personal actions as well as in labor operations, humans implement conscientiously articulated goals. These goals point toward some future objective, and may be said to be an expression of a result to be achieved. For example, when you want to build a table, even before starting to work on it you already have in your brain a picture of the table you want. This goal determines much of the process you will go through in doing the work. Because you have an objective, your consciousness and memory will be selective, and the degree of intensity of your desire to attain your objective will also determine the zeal with which you work. In other words, it depends on whether the action of your intelligence in the course of the work is in an extremely active state. If it is not in such a state, a person cannot give full play to his wisdom and creativeness. Therefore, an understanding of the significance of a job, true implementation of the principle of distribution in accordance with work done, and complete arousal of an enthusiastic state in the action of human intelligence are all very important in improvement of the level of work.

Fourth is consideration of human experience and the level of training in occupational skills. An operator may possess quite good diatheses such as nimbleness in perception--reaction to movement, strong memory, accurate reasoning, and ability to make judgements, but if he lacks training in a particular occupation, he will be unable to cope in that occupation. Therefore, in modernized production or national defense organizations, personnel to carry out jobs must undergo rigorous selection and training, and in the selection process most important is the psychological factors in the candidates such as the above stated sensory perception, memory, observation, and thinking abilities. These are tested, with the best being selected for employment. Training then focuses on the needs of the particular occupation with the various categories of people to undertake particular jobs undergoing training so that they will possess not only knowledge of a particular occupation but also master the skills necessary to do it. At the same time, the training process is also a selection process. For a rather long period of time, the person being trained is observed as he goes through various training courses to see whether he has a career potential. Only in this way can there be a real matching of outstanding personnel to the positions for which they are needed. This is an extremely important aspect in the improvement of the working efficiency and reliability of the entire system.

Training is a very important issue in modernized enterprises. Because replacement of production technology proceeds faster and faster, some old employees must also be regularly trained so they can meet growing demands. This is so in national defense, in transportation and communications, and in mining. Frequently when new machinery, new weapons, or new production lines have been designed, new training of personnel has had to begin as well. The method of doing this is to design a simulator, and through the use of an electronic computer and other new techniques, a simulated device that is in its method of operation entirely like the equipment it simulates is produced. Once a person has become familiar with the new method of equipment operation by using the simulator, as soon as the new piece of equipment has been test produced it can very rapidly be put into test operation. In this way the time required to put an entire system into use can be greatly reduced, because, for a complex piece of equipment, as much as 1 or 2 years might otherwise be required if training of personnel awaited completion of manufacture. Another benefit of training personnel with a simulator is that it permits a check on whether the design of a thing is right so that early detection of problems can bring about early changes in design. Training devices have already grown into special fields of study. Real life situations can be made perfectly true to life using them. The flight simulator is a typical example. The United States Air Force will be able, through the widespread use of simulators in training pilots, to reduce pilot training time by 25 percent during 1980. The United States Air Force has invested $1.8 billion to install 229 modern simulators. Though the start-up costs for these modern simulators is high, they are cost effective because they will effect saving in expenditures for pilot training. It is estimated that the cost of a single simulator will be recovered over a period of between 2 and 6 years through the savings in fuel and the reduced numbers of aircraft required for training, and there will be indirect reductions in expenditures for crews needed in the training of pilots as well as in losses resulting from accidents.

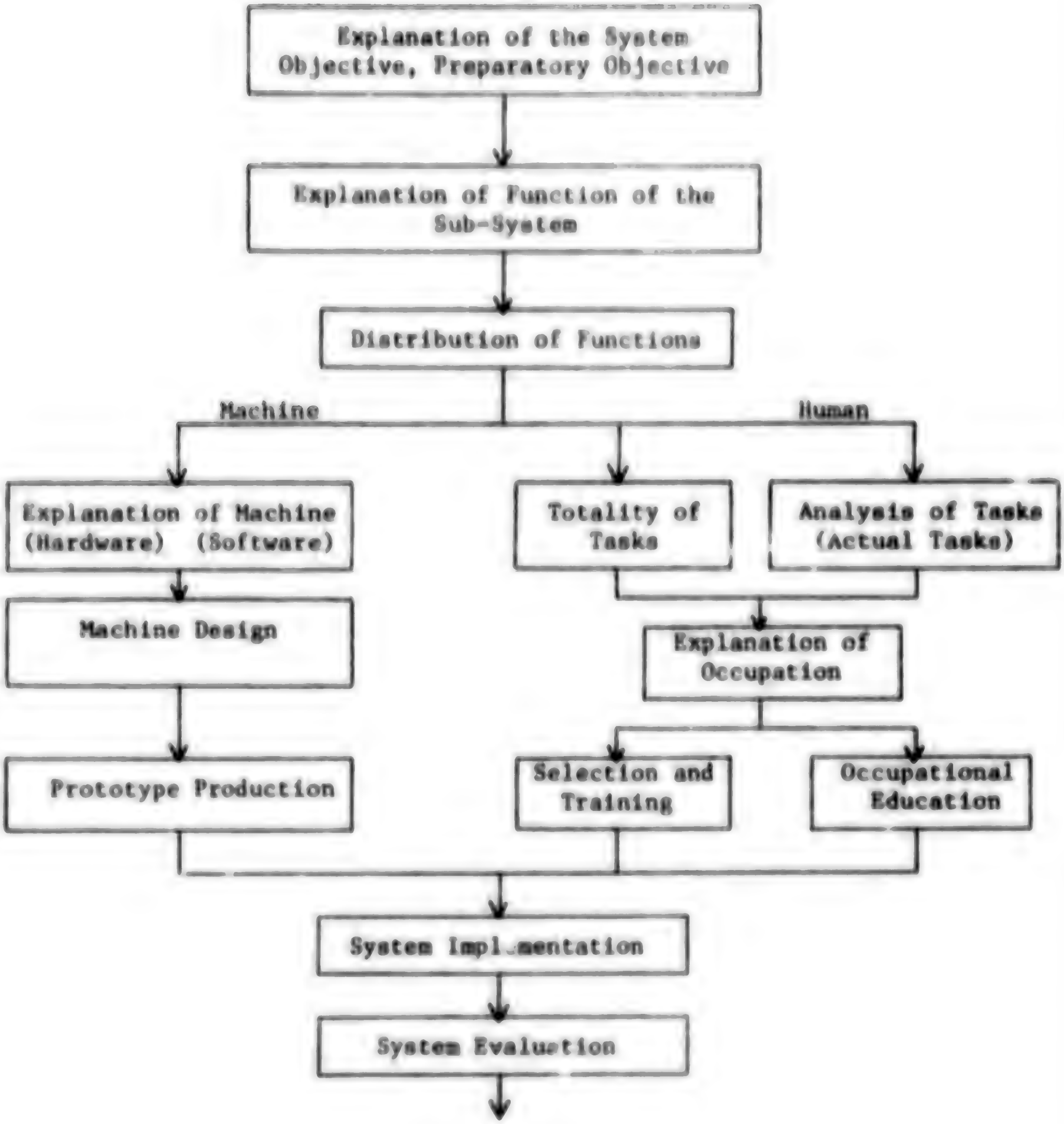
Fifth is study of human social problems. In our study of basic human psychological processes, such as the study of the thresholds of simple human reactions, identification reaction time, scope of observation, breadth of memory, sense of vision, sense of hearing (by threshold is meant reception of the lowest stimulus, as, for example, the point at which you are just able to hear a sound of gradually increasing intensity, which is the threshold of your sense of hearing), we eliminated all human social aspects. But in any examination of the human factors in a complex system, one cannot be limited solely to these basic data; humans must be treated as social beings. This means consideration of human interrelations, cooperation in work tasks, the psychological atmosphere of the production environment, human sense of responsibility, organization, discipline, human initiative and zeal in work tasks, or to use the technical terminology of psychology, the level of motivation.

In capitalist societies, production managers, technologists, designers and foremen give full attention to these problems, hiring social psychologists to provide them counsel on these matters. Through various social surveys, analyses or products, analyses of operations and analyses of quality, they seek problems occasioned by humans, and they then go on to analyze the social problems within the human factors and then propose to the personnel at the enterprises for their consideration and application strategies for countering these problems. To a certain extent these ameliorate class conflicts, conflicts between the leaders and the lead, and conflicts between some workers and others to bring about increases in the rate of production. In Japan, for example, in order to stimulate the enthusiasm of employees, enterprises have adopted a series of methods, putting forward the so-called "life-long employment" system whereby the employees have a "feeling of stability" about their employment that fosters a sense of "mutual dependence" with an enterprise. They propagandize the enterprise as a large family to forestall clashes between workers and capitalists. For this purpose, the managers of enterprises have thought up many methods such as during times of economic deflation all efforts are to be made not to dismiss employees or to dismiss only a small number, a requirement that managers on all levels "care about" the workers, so as to create an atmosphere conducive to stability. Furthermore, both the wage system and the awards system employ these same kinds of "life-long employment" systems, and awards are also given for reasonable suggestions from employees so as to increase the concern of the workers for the enterprises. The welfare system also has effort put into it to quiet the workers and increase their enthusiasm to serve. Leaders of enterprises expend large amounts of energy on human tasks, striving to arbitrate employee relations. In workshops, for instance, hang slogans that read, "Unite as One, and "Value Harmony." Employees are organized to carry out "autonomous management" groups, and to increase the "dialogue" between capital and labor etc. The most basic guiding thought is to strive to make the material welfare of workers as individuals intimately related to the administration of the enterprise, thereby stimulating the enthusiasm of the employees. In capitalist societies, because of difficulties inherent in the economy itself whereby unemployment is unavoidable, unemployment is always a frightful specter that constantly exists among the workers. The heads of enterprises use this to propose so-called "life-long employment," which is so that the workers will not go against the interests of the enterprise their whole "life-long." Such material incentives reinforced by the threat of unemployment are the two levers of social psychology used in the capitalist system to muster the enthusiasm of the workers.

Under the socialist system, the relationship between the workers and the enterprise differs in its very nature from that of the capitalist system. The workers become the masters of the enterprise, and this is the most essential aspect of the relationship between people in our society. We possess conditions that are fundamentally superior to those of capitalist society for arousing the zeal and initiative of the masses. But the problem is not this simple. Under the conditions of socialism contradictions among the people still exist and incompatibilities exist between the superstructure and the economic base. If we are not good at organizing, do not deeply and painstakingly conduct work in political ideology, and lack a body of scientific rules and regulations, we will still obtain no good results. Therefore, taking aim at the problems that currently exist in production management, and study of the social aspects of the human factors continues to possess important real significance. Under the guidance of Marxist-Leninist principles, a combination of concrete circumstances as they exist in our country and the absorption of foreign practices in this regard is still necessary.

First of all, it is necessary to clarify just what the basic human motivations are for undertaking production activities under socialist conditions. We believe the motivation is to satisfy needs--material and cultural needs. It is only to satisfy human needs that there is production activity, and production activity gives rise to new needs in turn. The level of growth of production determines the character and the level of human needs. Therefore, under different social situations different kinds of needs exist. We are still in the stage of socialism in which the level of the development of production is still rather low and in which the old divisions of labor continue to exist; therefore, labor is still not the primary necessity for human life. This is a socioeconomic phenomenon that is reflected in the psychology of the people, and it should not be viewed as resulting from an insufficiently high ideological consciousness of the workers. Thus, when we discuss people's motivation for production, we should not overlook the requirements of the material life and of the cultural life of the workers. In the wage system, the award system, the promotion system, and in welfare measures etc. the principle of distribution according to labor performed must be assiduously implemented. Those who work with zeal, who are innovative, who observe rules and regulations in a model way, and who create new achievements in production must be given all around encouragement and realize real increases in their incomes. This should also be the standard throughout the superstructure, and work in political ideology should be consistent with the system of concrete rewards. One should not go outside the bounds of the stage of historical development of the society to advocate other kinds of ideological standards, as for example, to propagandize the need at the present time that labor must be the first requirement for life. Though to do so may seem very revolutionary, in actual fact it is unrealistic and may be counterproductive in arousing the enthusiasm of the masses.

In the above we have discussed, from five different levels, problems of the human factor that should be considered in systems engineering. A proper resolution to these problems will help increase the productivity rate, increase income, reduce costs, and be of help in the rapid realization of the four modernizations. The level of the development of automation in production in our country is still quite low; human labor resources are still extremely abundant, so these characteristics should further urge us to pay attention when we are arranging for the human factors in production so that we consider our own characteristics and not blindly and indiscriminately copy foreign methods. But in the principles and methods of systems design, some foreign experiences still merit serious attention. For example, the way in which they consider the human factors when designing a system is also enlightening for us when we consider this problem.


Explanation of the System Objective, Preparatory Objective
Explanation of Function of the Sub-System
Distribution of Functions
Machine
Human
Explanation of Machine (Hardware) (Software)
Totality of Tasks
Analysis of Tasks (Actual Tasks)
Machine Design
Explanation of Occupation
Prototype Production
Selection and Training
Occupational Education
System Implementation
System Evaluation

In the above we have discussed in a general way the human problems in systems engineering. How to handle the relationship between men and machines in systems engineering is an extremely complicated problem and one that has not yet been solved. Numerous experts both at home and abroad are working hard on it. Looked at from the standpoint of the "study of the unknown," the relationship between men and machines is not simply the addition of the attributes of one to the other but rather a mutual interaction and a mutual penetration from which the system itself can produce its own characteristic attributes. While still a young man, Marx foresaw that the innate power of man could become reflected in the industries he created. He imaginatively compared the industry created by man as "the already open volume of innate human strength is a study in the psychology of perceptually existing humans." ("Original Manuscript of Economics and Philosophy," Chinese text, p 90). Every tool, including the most modern automated machines and electronic computers, are no longer simple natural things, but contain within themselves human experiences transformed into material, and qualities of human psychology. Looked at from this standpoint, man himself is a system. His "free will" cannot go beyond the bounds of his own substance or the restraints imposed by his social environment. Thus man's position in a system is one not only of guider of the system and controller of the system but also one of being controlled by the system and being obedient to the demands of the system. The greater the scope of the system, the greater the number of links involved, and the more people are regulated by the system. In future the conception of systems will very, very far exceed the present field of engineering technology to become a reality in the social life, the political life, and even the daily life of people. The role of both man and the highly resourceful machines that man creates and how they will exert their capabilities within a system for the greater well-being of mankind will always be a stirring vista in scientific study!

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STRENGTHENING BUILDING MATERIALS INDUSTRY URGED

Beijing JINGJI YANJIU in Chinese No 11, 20 Nov 79 pp 41-48

[Article by Li Jingwen [2621 0079 2429]: "Questions on Speedy Development of the Building Materials Industry"]

[Text] In his "Report on the Work of the Government" delivered to the Second Session of the Fifth National People's Congress, Comrade Hua Guofeng put forward 10 tasks on which our country must place emphasis at the present time for the development of the national economy. The third of these tasks is "real strengthening of the coal, petroleum, electric power, communications and transportation, and building materials industries, striving to overcome these weak links in the national economy." Conscientious execution of this important directive from Comrade Hua Guofeng for the vigorous strengthening of the building materials industry is an important measure in the first round of implementing the program for adjustment of the national economy and in preparing for realization of the four modernizations.

1. Building Materials Industries Are Important Raw and Semi-finished Materials Industrial Units

Building materials industries are industrial units for raw and semi-finished industrial materials that provide construction materials and various non-metallic minerals to the national economy. As soon as the subject of building materials is mentioned, one may readily think of the bricks of the Qin dynasty and the tiles of the Han," and some comrades do have the idea that brick and tile industries are all there is to the building industry. In fact, however, the building industry encompasses a scope much broader than the brick and tile industries. Building materials may be divided into three large categories. The first such category is construction materials, which consist of numerous varieties such as the construction materials used in most civil engineering projects as well as associated equipment, numbering more than 70 kinds of things. Most important of these are concrete, plate glass, sanitary porcelain and ceramics, bricks, tiles, sand and gravel, stone, asphalt felt, and mineral wool and such water repellant insulating materials.[1] Construction materials constitute an important material foundation in capital construction. No matter whether building a house, a plant, water supply and sewerage conduits, and hearing and ventilating projects, or whether building bridges, roads and dams, large amounts of construction materials will be needed. Building materials account for upwards of 50 percent of total construction costs. In most parts of our country, for each square meter of home construction, about 1.5 tons of construction materials will be needed. Therefore, if capital construction plans are to be positively reliable, there must be a matching up of the construction to be done with the amount of construction materials to be supplied; furthermore, the durability of the construction materials, their lowness of cost, and their attractiveness and suitability will also determine to a great extent the selection and the rational use of construction materials.

The second category of products from building industries is non-metallic minerals. Mineral resources found in nature number more than 100 varieties of non-metallic ores in addition to the metallic ores, and they find wide use in industry at the present time with more than 30 applications. Some of these non-metallic minerals are, in themselves, ideal construction materials, or the main constitutents in the production of construction materials, as for example, limestone, quartz, marble, granite, gypsum and porcelain clay. Another category including asbestos, mica, diamonds, graphite, talc and crystal, are not used chiefly as construction materials inasmuch as they possess certain uniquely outstanding characteristics that make them indispensable in the metallurgy, fuel, chemical, and machine industry sector as well as in the development of sophisticated national defense industries. Asbestos, for example, is the only naturally occurring mineral fiber. It possesses great tensile strength and special properties that enable it to stand up under high heat, be a good heat insulator, be acid-resistant, alkali-resistant, anti-corrosive, sound insulating, and electric insulating. Consequently, it finds use not only in the manufacture of asbestos and concrete products and insulating products used in construction, but also in the manufacture of textile products, rubber manufactures, transmission articles, etc. for a total of more than 300 different kinds of products that are widely used in various sectors of the national economy. It may be said that every modern industrial unit that has machinery will use various materials and components in which a primary part is made of asbestos. Another example is diamonds, which are the hardest natural-occurring mineral and which are an ideal material for use in industry to make precision cutting tools and shock-resistant bearings for navigation instruments.

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[1] Steel and wood used in construction are also construction materials, but according to distinctions made in the products sector they are not products of the building materials industry; instead they are regarded as raw materials that have been manufactured into component parts of construction materials such as doors and windows, construction hardware and water heaters, and are thus building material products.

The third category of construction materials is those in which the above two categories form the principal raw materials or ingredients but which have been processed into new non-metallic materials or products such as glass fibers, glass fiber reinforced plastic, glass used for scientific and technological purposes, quartz glass, special ceramics and porcelains, Zhu Shi [6999 4258], cement pressure pipe, cement boats, cement railroad sleepers, cement poles for power lines, etc. For the production of these items not only are raw materials abundant, the technology relatively simple, required investment small, and results seen very quickly, but also since they possess certain special fine characteristics, they may be used in certain areas to take the place of steel, wood, cotton and hemp, silk and wool. Thus, they are important raw materials for the development of modern industry. Take glass fiber reinforced plastic, for instance. Since it is light in weight (being only about one-fourth the weight of steel), is stronger than alloy steel, resists corrosion, resists momentary high heat, and is a good electrical insulator, many countries have used it as a raw material for wide applications, from civilian industries to advanced technologies. It exists in more than 30,000 varieties, and total world production amounts to more than 1 million tons. It has seen quite large development in our country in recent years as well, with broad applications in various industrial sectors and in national defense complexes, to become an indispensable new key material in our country's industrial development.

From the technological and economic standpoints, the building materials industries possess the following characteristics:

(1) The building material industries are both excavation industries and heavy chemical industries. The principal products of the building industries such as cement, glass, ceramics and porcelain, bricks and tiles, and stone as well as asbestos, mica, diamonds and such non-metallic mineral deposits all require a large volume of mining and excavation work. For this reason we say that "building industries are half mining industries." In the case of many non-metallic mines, the amount of mining done is about the same as for nonferrous metals and rare metals. For example, for every ton of asbestos mined, 140 tons of rock must be excavated; for every ton of graphite produced, 170 tons of ore must be mined; for every ton of industrial mica produced, 710 tons of rock must be excavated; and for every karat (1 karat equals one-fifth grams) of diamonds produced, 140 tons of sandstone must be removed. Therefore, development of the building materials industries requires a large amount of geological prospecting and mining operations. At the same time the building materials industries are also heavy chemical industries that rely largely on furnaces to carry out production. Cement, glass, ceramics and porcelain, and fire resistant materials are all products that are formed when complex chemical changes take place when raw materials are calcinated under high heat. Thus they require observance of heat processing rules of operation and the consumption of large amounts of fuel.

(2) The building industry is an industrial sector that contains many industries, many varieties, and many uses. It has already been explained above that building products may be divided into three categories, and within each category are many varieties and specifications with each variety and specification having a different application. There are, for example, more than 100 varieties of cement, which may be summarized on the basis of their chemical composition as silicates, aluminates, aluminum sulfate, clinker-free cement, and Roman cement. On the basis of use, in addition to the common variety of cement used in industry and in civilian construction, there is large dam cement used in water conservancy projects, oil well cement used in development of oil fields, corrosion resistant cement used in projects where resitance to acids and alkalis is required, quick setting and super quick setting cements used in things that revolve at high speeds and for rush repairs, double quick cement used in projects requiring quick setting and quick hardening, and expanding cement used to prevent seepage and plug leaks.

(3) The building industry is the industrial sector that uses industrial wastes most fully. According to crude statistics, our country produces several hundred million tons of industrial wastes each year among which are gangue, powdered coal ashes, blast furnace slag, steel slag, mine tailings, and both industrial and civilian furnaces cinders. These wastes not only take up a large amount of land and agricultural fields, they also pollute the atmosphere and the water to damage the health of the people. Use of these wastes to produce building materials is the best way of combining use of wastes with turning them into something valuable. For example, use of gangue for the production of cement, bricks, and ceramsite; and use of coal ashes to produce aerocrete, to make bricks and to produce cement, converts wastes into new products, improves environmental sanitation and creates material wealth.

From this it may be seen that building materials and non-metallic mine products are important raw materials for capital construction and for the development of modern industry and sophisticated national defense enterprises. The building materials industries are important raw and semi-finished industrial units in the national economy.

2. The Building Materials Industries Rank First Among the Advanced Sectors of the National Economy

In the development of the national economy, fuels and communications and transportation must come first. After these, one of the first sectors to get underway is the building materials industry. This was most recently advanced by the Party Central Committee on the basis of fundamental Marxist-Leninist principles and after a summarization of foreign and domestic capital construction experiences. It correctly reflects the requirements of the objective economic laws of socialism, and it is an important measure in the acceleration of the development of our country's national economy.

in the development of modern industry, the building materials industries must, like the fuel energy industries, get underway first. This is an idea that Lenin early elaborated. Lenin pointed out that "the first requirement for development of large machine industries (as well as the most characteristic companion of the development of large machine industries) is industries to provide fuels and building materials as well as the development of construction industries."[1] Without fuel, engines cannot move; without building materials, there can be no construction of plant buildings, bridges, roads and warehouses, and the means of labor cannot be made ready; consequently, modern industrial production will be impossible. The development of modern large-scale industry requires construction of large numbers of plants, mines, power stations, railroads, bridges, harbors, and warehouses, and construction materials are the indispensable material foundation on which large-scale construction is built. "Food and fodder should go before troops and horses"; unless construction materials industries get started first, they will be unable to provide sufficient "fodder" for large-scale capital construction, and construction industries will be in a position of "having to cook meals without rice," with industrialization being an impossibility. Thus, in the development of the national economy, the building materials industries must get started first. This is an objective requirement for the development of modernized industry.

A fairly rapid development of the building materials industries is also necessary for the modernization of agriculture. Water conservancy is the lifeblood of agriculture, and cement is indispensable to capital construction for water conservancy in farmlands. During the past 10 years rapid development has occurred in the growth of small cement industries in our country with an average annual increase of around 20 percent. More than 3400 small cement plants are spread throughout the country and they now produce 64 percent of the total cement produced nationwide. This is the industry among the "small five" that has developed fastest. But for many years the state has virtually made no investment in them, and in every prefecture, county and commune, their construction has relied on local efforts. Their main reason for being is the need for large amounts of cement in agriculture. Small-scale cement production is needed to build water catchments for repairing underground ditches, improving the soil and building fields and in bettering the conditions for agricultural production; for building roads, building bridges, building farm boats and developing transportation endeavors in rural villages; for building small electric power stations, making utility poles, building concrete conduits and promoting rural electrification; for building grain sunning grounds, constructing grain storage; making methane gas, making pig stys, cattle sheds, rabbit warrens, fish ponds and developing farm sideline production; for fabricating concrete structural members, building new rural villages and improving the living conditions of commune members;

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[1] Lenin: "Development of Russian Capitalism" "Collected Works of Lenin," Vol 3, p 479

for developing local industry etc. It has also played a major role in accelerating the four modernizations in agriculture and in transforming the countenance of rural villages. Some other products that derive from the building materials industries also are closely related to the development of agricultural production. For example, the new technology of hot house nurseries for young plants and the development in north China of vegetable growing in hot houses requires large amounts of plate glass.

In a socialist planned economy, a head start for the building materials industries seems entirely necessary. In order to bring about socialist expansion of further production, socialist countries required planning for the scale and speed of capital construction. Just how large the scale of construction should be will be determined by the political and economic conditions at various times, but most important is that the scale of construction be appropriate to the material and financial resources of the state, particularly to the material resources. Capital construction requires more than capital. In addition to equipment, most important is construction materials, from steel, wood, cement, and glass to bricks, tiles, sand and gravel, and stone. All are necessary. Thus, how able the building materials industries are to provide quantities of products to capital construction and other production sectors will be an important factor in determining the scale and speed of capital construction, and it will also be an important factor in determining the speed of development of the national economy. In order to assure planned proportional development of every sector of the national economy, sufficient building materials must be supplied to them to enable them to complete smoothly their capital construction plans, to realize their new production potential, and to expand the scale of their production in a planned way.

The goal of socialist production is to bring about constant increases in the people's standard of living through the growth of production. In addition to food and clothing, shelter is another necessity for human life. Housing has been in short supply for people in urban areas during the past 10 years as a result of the disturbances and destruction caused by Lin Biao and the "gang of four," with "several generations under the same roof," and no house to move into after marriage being common phenomena that seriously affect the work performance and the livelihood of employees. To bring about improvements in housing conditions for urbanites, a first requirement is that the construction materials sector provide construction materials in sufficient amounts, of good quality, and of proper kinds. Thus, in order to solve the housing shortage for the work force, the construction materials industry must develop faster.

In the United States and other industrially advanced countries, the construction industry is the most important of the three pillars of the national economy. The construction industry not only builds industrial plants and builds houses, but its growth stimulates the growth of related trades and industries. To do this construction, growth in the building materials industry is necessary. Therefore, in the process of industrialization in every country of the world, the building materials industries received priority development and their speed of development was generally higher than the speed of development of the national economies. Statistics show that the national economy of Romania had a 13.8 percent rate of increase between 1961 and 1965, while the increase for the building materials industries was 16.62 percent; the rate of increase for the Hungarian economy was 7.5 percent, while the building materials industries increased by 10.7 percent. In Bulgaria the rates of increase were 11.7 percent and 16.6 percent; in East Germany 5.8 percent and 7.1 percent; in the Soviet Union 8.6 percent and 8.8 percent; and in Poland 8.4 percent and 8.1 percent.[1] In these countries the ratio of investment in building materials industries was generally between 4 and 6 percent of total investments in industry, or between 2 and 3 percent of total capital investment, which means that investment in building materials industries was not much less than investment in the metallurgy, fuels, and electric power sector. A look at annual average investment for the period 1960 and 1975 shows that in the USSR investment in the building materials industries was about 75 percent of investment in the steel industry, and in Bulgaria about 80 percent. In Czechoslovakia, investment in the building materials industries was about 60 percent of investment in the metallurgy industries; in Hungary it was 50 percent; and in Poland 45 percent. Of the building materials industries, most industrially advanced countries accord priority for a definite period of time to development of the cement industry. For example, in the United States and France during the 1930's and 1950's, and in the United Kingdom during the 1930's, the rate of growth in the cement industry was higher than the growth rate for industrial production, and higher than the growth rate for steel as well. In the United States during the decade of the 50's, the annual rate of growth for cement was 3.83 percent, for steel 0.3 percent, and for industrial growth 2.86 percent. In France during the same period, the figure for cement was 7.4 percent, for steel 3.24 percent, and for industrial production 5.24 percent. In some countries the speed of growth for cement was even higher than the speed of growth for electric power. In Japan, electric energy production rose 10.4 times between 1950 and 1973, while cement production increased 17.5 times; between 1950 and 1975 in the USSR, electric energy production increased 11.3 times, while cement output increased 11.9 times. By 1976 world cement production had reached 716 million tons for a 126 percent growth increase over the 316 million tons of 1960, which was higher than the growth rate for world steel production and energy industries for the same period. Other construction materials also developed very quickly. For example, world plate glass production amounted to more than 2 billion square meters, of which United States production was the highest and fastest growing as well. In 1976, production of plate glass in the United States amounted to 304 million square meters for an increase of 52 percent over the 198 million square meters of 1970. The varieties of plate glass also increased with common plate glass used in windows, layered glass, embossed glass, and machine polished glass no longer being able to meet the needs of modern construction standards. Many countries are now mass producing glass consisting of double layers with an air space in between layers, heat-absorbing glass, heat-reflecting glass, large sizes of bullet-proof glass, and layered glass. One characteristic of modern construction is the use of large glass windows and glass doors 4 or 5 meters wide as walls in many structures, which not only increase the area lighted by natural light but also improve the beauty of the structures. There has also been a great development in both quantities and colors of sanitary ware, such as porcelain faced brick that does not show age, is sturdy, comes in gay colors, and is very decorative, for which reasons it has found widespread applications in construction abroad. In 1970 world production of porcelain faced brick amounted to 37 million square meters. By 1976 this had jumped to 65 million square meters for a 76 percent increase. The volume of increase in production of sanitary ware has also shown rapid increase in all countries, such as in the United States where in 1962 11.36 million individual items of sanitary ware were produced, growing to 30 million items by 1976 for a 1.6-fold increase.

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[1] Since the systems of management over building materials industries differ in various foreign countries, statistics are lacking from many countries on all building materials industries. Eastern European countries have a unified parent unit for building materials industries (the Construction Materials Ministry), but non-metallic minerals are not included in their figures.

Experiences in economic construction in our country during the 30 years since its founding also illustrate the need for a little lead in the building materials industries and for their rapid development so that they will be able to provide the national economy with sufficient building materials and non-metallic materials. Only in this way can smooth development of large-scale construction and the rapid development of other industries be assured. Without this, the building materials industries will lag behind and be a drag on capital construction, with poor results deriving from investment, which will adversely affect the growth of industrial and agricultural production. During the period of the First Five-Year Plan, annual growth in the building materials industries averaged 20 percent, which was almost double the growth rate of the national economy and higher than the growth rate for all industry, thus guaranteeing the availability of 156 critically needed construction materials for large-scale construction. During this period construction quotas were completed with few problems, and results obtained from investment were also quite good, with annual increases in new fixed assets amounting to 83.7 percent of capital invested. During the First Five-Year Plan period, severe imbalances occurred in the proportional relationships of every sector of the national economy, with a great one-sidedness developing in the steel industry. Not only did development not occur in the building materials industries, but a decline took place. But during this period, the scope of construction rapidly expanded with the accumulation rate rising from 24 percent to 31 percent during the period of the First Five-Year Plan. Consequently, an overall shortage of construction materials occurred with many construction projects coming to a halt for want of materials and a spectacular decline taking place in investment results. New fixed assets resulting from capital construction amounted to only 71.4 percent of investment.

During the latter part of the Second Five-Year Plan and during the 3-year period of readjustment, rapid growth took place in the building materials industries as a result of the policy of "readjustment, consolidation, replenishing, and improving." During the 3-year period of readjustment, the the average growth rate for the building materials industry was 30 percent, to become the fastest growing industrial sector in the national economy. It provided abundant construction materials for the revival and development of the national economy, and it was the principal reason that good results from investment in construction were assured for this period. (During this period new capital assets amounted to 67.1 percent of investment).

During the more than 10 years of disturbance and destruction by Lin Biao and the "gang of four," the usual proportional relationships in the national economy were devastated, and building materials industries were relegated to a position of little importance with slow development. The rate of growth in production was very slight, particularly in small and medium cement plants, glass plants, and ceramic and porcelain plants where the effects on capital construction were quite great. Average annual rate of growth for cement plants, for example, during the period of the Third Five-Year Plan was only 6.5 percent, and for the period of the Fourth Five-Year Plan only 9.7 percent, both lower than the growth rate for industry. Sanitary ware for construction use was slandered as being "bourgeois luxury items," so numerous enterprises shifted their production or stopped their production, so that production of sanitary ware during the Third Five-Year Plan declined by half. Still, during these more than 10 years, the rate of accumulation in the national economy steadily climbed, reaching more than 32 percent during the period of the Fourth Five-Year Plan, with the scope of construction constantly expanding. The result was a severe shortage in construction materials, with construction materials not being assured for some projects after they began. This brought about an attenuation in the capital construction front and a sharp decline in the results obtained from investment.

This shows that a head start for the building materials industry is an objective necessity in the development of modern industry, and it is required, as well, by the objective laws governing planned proportional development of a socialist economy. If this law is obeyed, supply of materials for large-scale construction can be relied upon and the results of investment will be good; if this law is contravened, a shortage of materials for capital construction will result and results from investment will be poor.

3. Plan To Give a Head Start to Building Materials Industries in the Course of 3 Years of Readjustments

The building materials industries are presently very much behind the times and constitute a prominent weak link in the national economy. A majority of the products of the building materials industries are short-range products for the national economy with sizeable conflicts in supply and demand. In cement, for example, where despite an amount of capital construction this year as great as for last year, a definite shortage still exists.

The cement shortage in the construction of dwellings in cities, towns, and industrial and mining areas, for example, is more than one-third of demand. This year shows a great emphasis on housing construction everywhere, with funds raised and planning taking place for more construction of dwellings in order to improve the living conditions of the broad masses of workers. But because of a shortage in cement and wood used as construction materials, many projects are unable to be completed on time and be occupied. The small amounts of cement used in agriculture are also insufficient for needs in numerous places. Plate glass is sufficient for only about half of needs of industrial and mining construction and urban needs. The large mass of rural villages have a great need for glass, but glass has virtually ceased going down to the villages. Nor does supply meet demand for bricks, tiles, lime, sand and gravel, and stone, building materials needed to build walls and finish houses. For the past several years the shortage of brick for capital construction and urban maintenance has been in excess of 10 billion bricks annually. In the broad mass of rural villages, thatched houses predominate. This year saw a bumper harvest and the prices paid for requisition purchases of agricultural products were also raised. Once the farmers' incomes increased, an urgent demand for housing construction took place, requiring large amounts of construction materials. A very great shortage of asbestos and diamonds and such non-ferrous minerals also exists. Some have to be imported. The technology, equipment and standards for management in the majority of building materials enterprises are also backward. This backward state of the building materials industry will require 3 years of readjustment to effect a thorough change and make it into an industry with a head start. Only in this way can it meet the needs of other industries and of the development of the national economy.

In order to hasten the development of the building materials industries so they will be out in front rather than lagging behind, the policy of "readjustment, restructuring, consolidation and improvement" must be conscientiously implemented and the following relationships well handled:

(1) Good handling of the proportional relationship between building materials industries and the development of the national economy. In laying out the plan of the national economy, the building materials industries must truly be placed in a forward position. In a report to the Second Session of the Fifth National People's Congress, Comrade Yu Quili [0151 4428 6849] said that in this year's "national budget, distribution of investment focuses on agriculture, light industry, fuels and power, construction materials, and transportation." This is a correct program that is in accord with the real needs of the national economy. During the 10-year period from 1967 to 1976, investment in construction of building materials industries represented only a small proportion of total investment in the overall national economy, and new increases in ability to produce major building materials were slight. For example, between 1970 and 1977, annual average increase in productivity for large-scale cement production was only 600,000 tons, an increase rate of only 3.3 percent. During the past 2 years, an increase in investment in building

materials industries has taken place, but growth of building materials industries still does not meet the needs of the national economy by any means. Following 3 years of readjustment, a great growth must certainly occur in the national economy and there will be an inevitable increase in the demand for construction materials. Therefore, a good job must be done in effecting an overall balance in the national economy, and when long-range plans and current plans are being formulated, there must be a looking ahead and a looking behind with overall planning being done to properly handle the proportional relationships among the building materials industries and the scale of capital construction in relationship to the entire national economy, so that the building materials industries will grow somewhat faster. If this is not done and if we do not place the building materials industries a bit ahead in the course of 3 years of readjustment, several years later when the scale of construction has expanded throughout the national economy, the building materials industries will still be weak links and various construction items will continue in short supply. This will have serious consequences for the pace of the four modernizations.

Once there has been an increase in state investment in building materials industries, the building materials industry sector will have to place great stress on capital construction work, and strive to expand new increased productivity. It will have to do things strictly in accordance with the sequences in capital construction, do a good job of preparatory work in the period prior to construction, and really work to concentrate forces to wage a war of annihilation to assure that the key construction projects for the building materials industries that have been included in the plan are built and go into production as the plan requires, to become productive forces rapidly.

(2) Do a good job of handling the relationship between getting full use of potential in old plants and the building of new plants, and place priority on exploitation of existing potential, innovation, and improvements to give fullest play to existing enterprises. During the past several years, building materials enterprises have grown to number more than 40,000 spread throughout the country in cities and villages everywhere. The potential existing in these old enterprises is very great. For example, there are some large and middle size cement enterprises that have yet to achieve their designed potential, and in about half the enterprises the cement kilns have never attained the lowest recorded outputs per unit of time. Many other building materials are in a similar situation, and consequently a distinction is necessary as to different situations while making outstanding achievements in the readjustment, consolidation and improvement of old enterprises, improving technological and management standards, uncovering unused potential, increasing the volume of production, and particularly in improving quality, in increasing variety, and in lowering waste and costs. There are numerous small enterprises among the building materials industries, and a good job in readjusting small building materials enterprises through diligent investigation and study will be a very onerous task. For example, the small-scale cement plants that are the first of the "five small"

industries, have grown rapidly in recent years and they have played a very large role in giving support to agriculture and in developing local industry. But some problems also exist in their growth, principal of which is that in some small cement producing enterprises the various pieces of equipment are not matched to each other, the level of management is low, quality is poor and price is high, and deficits are severe. Therefore, distinctions in different situations must be made and separate readjustments, consolidations, and improvements instituted. Small cement plants that have fairly good natural resources and transportation conditions should be actively helped along; where technological equipment is linked to form an integrated whole, help should be given to raise management standards, increase production, improve quality and lower costs; those small cement plants that lack raw materials, fuel or power, or where transportation is difficult and equipment and technical conditions poor, and where quality has been inferior and prices high over a long period of time with serious deficits occurring, should, depending on the situation, be required to go out of business, be combined with others, or shift production to something else as part of their readjustment. In most glass plants, technology is quite backward, with high consumption of fuel and poor quality merchandise. Those whose condition is good should be technically improved; those whose condition is bad should be reorganized and readjusted following the principle of deciding production in accordance with the market for it. Those enterprises whose productivity is great but who cannot get enough raw materials or fuel, or who compete with large industries for raw materials and products made from ores such as asbestos manufactures, asbestos cement tile, asphalt felt, small glass fibers, or small sanitary ware should be appropriately curtailed in their development on the basis of the availability of raw materials, fuels and power. Distribution of raw materials, fuels and power should be done in accordance with the principle of supplying the best to support enterprises where quality is good and consumption low, and to restrict the development of enterprises where quality is shoddy and prices high.

(3) Do a good job of handling relationships between new and old materials; vigorously develop new types of construction materials; and improve old materials. During the past 30 years in the wake of improvements in the building of houses and the development of high rise construction, many countries have virtually given up use of the traditional small bricks and have developed aerocrete, asbestos cement panels, plaster board, mineral wool board, fiber board and light aggregate concrete board and such new and light construction materials in order to satisfy the demands of the construction industry for a reduction in the weight of construction materials and to increase the extent of mechanization of construction. One example in aerocrete, which is a lightweight concrete containing air bubbles with a weight only two-thirds that of bricks and one-fifth that of ordinary concrete. More than 30 countries are presently producing it and total world production has increased from 2 million cubic meters in 1950 to 33.74 million cubic meters in 1977. It is used to build walls, to face building interiors, and to make floors of multi-storied buildings. Plaster board possesses different characteristics. It is light in weight and handy for

use in construction for applications in non-bearing walls, for ceilings, and for decorative covering of the inside of exterior walls. Asbestos cement is light in weight, of high strength, fire-resistant, and water-repellant. It is widely used as a wall facing material in construction for non-bearing outside walls, for dividing walls, for enclosures on verandas and for ceilings.

There are many advantages in the use of light weight panels. First of all, they reduce the dead weight of construction and lower construction costs. A one brick thick brick wall weighs 400 kilograms per square meter, while a 24 centimeter thick aerocrete wall weighs only 150 kilograms per square meter, or is 60 percent lighter than a brick wall. Composition board over an asbestos concrete board foundation is even lighter. For load-bearing and enclosing structures in buildings, use of volcanic pumice stone, expanded slag, ceramisite, and pearlite, all of which are light aggregate concretes, can replace ordinary concrete and reduce the weight of a building between 30 to 60 percent, reduce the amount of steel used by 10 percent, the amount of concrete used between 7 and 12 percent, and the consumption of materials between 7 and 18 percent. Secondly, the insulating properties of new materials are good, so fuel savings are possible. The insulating effectiveness of a 24-centimeter thick aerocrete wall exceeds that of a 64-centimeter thick brick wall, and the insulating effectiveness of a 12-centimeter thick wall made of asbestos concrete and mineral wool combination wall board is equal to that of a 66-centimeter thick brick wall. Third, they improve the working conditions of construction workers and hasten construction work. Sheets of asbestos cement panels are usually 3 meters long by 0.6 to 1.2 meters wide, and installing a sheet of asbestos cement board covers an area equal to laying up a wall 1.8 to 3.6 square meters in area, with the construction being completed between 3 and 4 times faster. Installing a sheet of aerocrete board is the equivalent of laying up 400 bricks. Only through the development of new kinds of construction materials and through the mechanization of construction can there be any modernization. Fourth, buildings built with new light-weight construction materials are more efficient overall, and they have strong resistance to earthquakes.

During the past few years our country has made a certain amount of progress in the study and development of new building materials, but the pace has not been great and, at present, new kinds of construction materials amount to only about 3 percent of materials used for building and facing walls. Most construction still relies on small bricks and tiles. According to incomplete statistics, 100 billion bricks were produced in our country during 1978, an increase of 60 percent over 1975 output. This shows that development of new materials is slow and that large amounts of materials are needed for construction; thus growth in production of small bricks and tiles continues to be rapid, taking up a lot of land and still not meeting the requirements for mechanization and modernization. What is necessary is steadfast matching of methods to local conditions, use of locally available materials, and following many different paths to rapidly and vigorously develop new building materials such as aerocrete, gypsum board, asbestos concrete panels, plastic flooring and wall coverings of cloth and paper, bringing about their greater and more rapid growth. Yet, for a long time to come, the old building materials will still be a large portion of those used, and thus we must continue to stress production of the old materials.

In areas where the available soil permits, clay bricks and tiles should continue to be produced to meet needs, but quality should be improved and changes made in varieties available. Particular emphasis should be given active use of industrial wastes to produce brick and tile products, the production of porous and hollow core blocks, improvement of levels of mechanization and improvement of working conditions for employees. While some industrially advanced countries develop new materials, they also pay attention to development of clay and mortar manufactures. Italian clay products, for example, are famous throughout the world. There are large panels of thin, porous clay used as dividing walls, and there are hollow core floors. Clay manufactures in West Germany are the equivalent of 6.5 billion standard bricks, and mortar products amount to 5 billion standard bricks. Their experiences merit our consideration.

(4) Do a good job of handling the relationship between strengthening basic work and developing production, with vigorous efforts in the basic work of strengthening geological prospecting for the building materials industries, building of mines, designing, machine manufacture and research, and education. Geological prospecting tasks for the building materials industries are enormous, but forces to carry them out are extremely weak with less than 1 percent of geological prospecting teams nationwide being so involved. Additionally, technical equipment is out of data and insufficient. The designing ranks are also weak with neither quantity or quality being sufficient to satisfy the needs of construction. Forces for manufacturing building materials machinery are even more backward, and the fact that no organization for the manufacture of specialized equipment has ever been set up has become a serious obstacle to rapid development of building materials industries.

Technicians in the building industries number only 1 percent of the total work force; scientific and technical capabilities in these industries are weak and lack integration, testing equipment and measuring instruments are old and out of date; and the building materials field is large but schools for it few and with little ability to attract students. These problems must be diligently worked on and solved with vigorous strengthening of basics to fill the ranks of geology, design, and scientific research. There should be large-scale education in building materials with active training of cadres and work force so as to provide advanced techniques and train technicians for the development of the building materials industries.

(5) Do a good job of handling the relationship between imports and exports and strive to expand exports of building materials to provide more foreign exchange for the country. In order to reverse the situation of backwardness in technical levels within the building materials industries, there should be

a planned importation from abroad of advanced technology and advanced equipment even while efforts are underway to enhance scientific research, to focus on important areas and organize attacks on problems. We should also do a good job of assimilating, using and improving upon technology and equipment imported from abroad.

The crux of greater importation from abroad of advanced technology lies, however, in an increase in exports that strengthen our balance of payments capabilities. Steady growth in exports of building materials has taken place ever since the founding of the Chinese People's Republic. Right after liberation only a few kinds of products were exported, but now there are between 70 and 80 kinds. The international market for our construction materials is currently very large, but our supplies are inadequate. Supply does not meet demand. The proportion of the total international market taken up by trade in similar products is quite small. In 1978, for example, trade in cement amounted to only 2 percent, in graphite only 3 percent, in asbestos only 0.5 percent, in talcum powder only 5 percent, and in marble, granite, and terrazzo only 1 percent. But we possess an abundant supply of raw materials for building materials manufactures. Our reserves of asbestos, talc, gypsum, graphite, and such non-metallic minerals are among the largest in the world. Our country's marble occupies first place in the world both in amount of reserves and in the varieties of designs and colors; thus, an expansion of exports is entirely possible.

The rate of foreign exchange return on building materials is high, so an expansion of exports would be very profitable. In terms of foreign exchange return, export of 1 ton of cement is the equivalent of the export of 1 bicycle or 1 sewing machine; export of 1 square meter of marble equals export of 100 jin of apples; export of 1 ton of asbestos equals export of 1 ton of refined sugar or 1.5 tons of oranges; export of 1 ton of asbestos manufactured products equals export of 1 ton of pork; and export of 1 ton of graphite equals export of one ton of husked rice. Expansion of building materials manufactures will not adversely affect the livelihood of the people, but it will benefit both the country and the people. Presently our exports of building materials amount to less than 1 percent of our total exports, a small proportion that should be expanded somewhat.

Expansion of building materials manufactures will, most fundamentally, require a growth of production and efforts to increase production. At the same time it will be necessary to make a major effort to improve the quality of these products, and to increase the varieties and specifications for these manufactures to meet the demands of the international market. Some building material manufactures such as plate glass that was selected as grade 1 domestically could be sold only as grades 2 or 3 in the international market, and sanitary wares for construction were variable in color with lack of uniformity in color even within a single lot. Additionally there was little variety in designs and colors. Colors and designs of marble and granite were all mixed up and the stone was low in luster and of non-standard measurements. Consequently sale price was affected. This state of affairs has to be rapidly improved. In order to assure completion of export quotas, certain enterprises and workshops should be designated special plants and workshops for the production of export merchandise with assured priority being given them for raw materials, fuel, power and transportation.

(6) Do a good job of handling relationships among the central authorities, the locales, the enterprises, and the individual workers and conscientiously reform the management system and give full play to initiative in all quarters in accordance with the requirements of objective economic laws. The majority of products from building materials industries are big and bulky, and thus not suitable for transportation over long distances. Each region, moreover, has both the resources and the need to use them. Thus, development of building materials industries must rely on people in every region working for themselves. Each place has to use local materials to carry out production locally and actively develop building materials industries on the principle of local supplies to meet local demands. They should build a foundation in construction materials that meets local requirements. The management system for enterprises in the construction materials industry as well as the method of distribution of merchandise should help bring into full play local initiative and help the growth of production. For example, a system of unified planning and unified disbursement presently exists in the system of distribution of the cement industry. This is not helpful in mustering initiative in the locales or in the enterprises concerned, and it should be changed to, "institution of a balance in the area under unified state planning with transfers of balances and redistributions of varieties to assure that surpluses are tendered to higher authority," and surpluses should be left with the enterprises to encourage locales and enterprises to complete state plans. There should be an increase in autonomy for management and administration in large enterprises so as to relate the management and administration of these enterprises to the welfare of the enterprise and the work force, and thereby increase initiative in the enterprise to organize production and develop production in accordance with social requirements. On the principle of specialized cooperation and the need for a rational arrangement of productive forces, there should be planned organization of cement, glass, non-metallic minerals and new kinds of construction materials companies and joint companies to institute a unified management system for production, supply and marketing in enterprises. The numerous products of the construction industries such as cement, glass, bricks and tiles, and asphalt felt, basic construction needs, things needed for production and maintenance, and things needed for the daily life of the people should be diligently investigated and studied with conditions being actively created and steps being taken for a system of management that combines planned adjustments and market adjustments, with planned adjustments being paramount and market adjustments being secondary. In addition to planned distribution, thought should be given to a suitable loosening of restrictions on supply in the market.

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PRODUCTION OF GOODS FOR CIVILIAN USE ACCELERATED

Beijing JINGJI GUANLI [ECONOMIC MANAGEMENT] in Chinese No 10, 25 Oct 79 pp 36-38

[Article by Fang Dapeng [2455 1129 7720] and Li Ruiyun [2621 3843 0061]: "Heavy Production of Civilian Goods Makes Up Deficits and Increases Surpluses"]

[Text] Ever since the 627 Plant was built in Hunan in 1958 it has not had enough work to do as a result of numerous changes made in military goods, plus the small amounts required, and so it has depended on state subsidies for a long time in order to continue to exist. Particularly since the Great Proletarian Cultural Revolution, deficits have occurred year after year and it has worn the deficit label for all of 14 years with the total deficit amounting to 20 million yuan, equalling a loss of half the plant. The broad masses of the people felt anxious and the leaders were very ill at ease. By way of changing this economically passive and backward situation, the plant's party committee began, during the latter part of 1977, to lead the staff and workers of the entire plant in a diligent combination of the military with the civilian in a program in which the civilian sustained the military. While safeguarding completion of quotas for military goods, they dug down deeply for unused potential in the enterprise and actively prepared and organized production of civilian goods. Gradually the kinds of goods they produced grew to more than 10. They turned out more than 5,600 "Friendship Brand" sewing machines for home use, 10 hydraulic power turbines, 122 revolving table machine-grip tool bit grinders, more than 1,000 silicon rectifier generators, more than 240 magnetic work tables, and even large bulldozers and tower cranes for civilian use. As a result of the steady expansion of production for civilian use, the ratio of civilian goods gradually increased, with marked economic benefits resulting. Last year, the plant's total industrial output value was 119 percent of plan, with eight economic and technical targets being fully completed in excess of norms to remove the deficit label and to make up deficits and increase surpluses. Between January and July of this year, this plan again produced bumper amounts of both military and civilian goods to complete its important quotas for military goods 5 months ahead of schedule, while at the same time turning out a large amount of civilian goods. Total completed industrial output value amounted to 92 percent of the plan for the entire year, and the plant exceeded its highest recorded levels for eight economic and technical targets, realizing a profit more than twice that of last year. At the same time they used collective methods supervised by all of the people to set up a collectively owned sewing machine workshop, which opened up new avenues for employment to solve an employment problem for several hundred sons and daughters of employees of the plant, thereby arousing the enthusiasm of two generations of people. Recently the Hunan provincial national defense industrial affairs office, together with the Fifth Ministry of Machine Building elaborated the military and civilian combination at that plant. The following provides particulars of what they did:

1. Unified ideological cognition to do a good job with lectotypes of civilian goods

When this plant set about organizing production of civilian goods, some ideological impediments existed among some of the cadres and the mass of employees, the principal ones being "one difficulty" and "two fears." They felt that the manufacture of military goods was complicated enough, and to make civilian goods too would add still more difficulties. They also feared that going in for civilian goods would hurt production of military goods; and they feared that if they were not able to turn out civilian goods that upper echelons might criticize them and lower echelons might blame them, in which case they would be hard put to deal with the situation. The plant's party committee took aim at these ideas and organized everyone to study and discuss the combination of military and civilian, and civilian support of the military so as to unify their ideological cognition and to strengthen their resolve to make civilian goods. By way of stimulating enthusiasm among the broad masses of employees for production of large amounts of civilian goods, they prepared some cost accounting figures for last year and then lay all the cards on the table for all the plant's employees. The plant had operated at a deficit for 14 years, and unless it went in for production of civilian goods, it would run an additional deficit in excess of 1 million yuan during 1978. Production of civilian goods offered the only real way of wiping out the deficits and turning a profit. The broad masses of workers said, "We will no longer just sit and eat socialism; the road of combined military and civilian production is the only one to follow!" The plant's party committee put forward the resounding slogan, "When military goods do not suffice, make up for it with civilian goods and make a greater contribution by turning deficit into surpluses." From top to bottom throughout the plant, everyone put his shoulder to the wheel and completed a whole quarter ahead of schedule its quota for military goods during 1978, thus making the quarter available for directing its entire efforts to the production of civilian goods and to do a splendid job of completing its quotas for the production of civilian goods, thereby fighting and winning a decisive battle to wipe out deficits and increase surpluses. Production of the civilian goods and a turnaround economically having occurred, the masses were happy and their zeal even greater. During the current year, output value of civilian goods has greatly increased again, rising from 17.8 percent last year to 37.6 percent this year as the proportion of the plant's total output value, and to play a role in civilian support of the military. Experience had taught everyone and quite a few comrades said, "In the past we ignored the military-civilian link and had economic bitterness to eat; now we value the military-civilian link and have economic sweets to eat."

Once ideology had become unified, zeal for civilian production increased, but to do a good job with lectotypes of civilian goods was another crucial link. This plant went about an overall consideration of this problem from three aspects: (1) selection of goods that could be marketed to fill existing needs, locating supplies, production, and unencumbered marketing channels; (2) considering the plant's technological situation, civilian goods technologically close to the military goods already being produced were to be selected for manufacture. In this way the time required for manufacture could be shortened, a saving in expenditures effected, and the products produced at an early date; (3) as the situation developed, to do a good job with the "four combinations," namely the short-range and the long-range, the simple and the complex, the common and the improved, and domestic marketing and export. For example, sewing machines were goods urgently needed by light industry. There was a large market for them and supply did not meet demand. Moreover, the plant had already manufactured sewing machines, producing more than 80,000 units per year of consistent quality that had been marketed in far away Southeast Asian areas. Most of the technical mainstays of this sewing machine production were still at the factory, and a strong desire for the machines still existed among the masses. Furthermore, the sons and daughters of employees of the plant had not been able to find work, and this had had a bad effect on the enthusiasm for production of the employees. The plant party committee resolved to take decisive measures and, using collective methods supervised by all the people, it transferred some cadres, vocational personnel, technicians, and some old workers who had had a lot of practical experience to set up the sewing machine workshop. Only 5 months time was required before production of the traditional "Friendship Brand" sewing machine for home use was resumed, which the masses welcomed when it was put on the light industry market. At the same time, the problem of employment for the sons and daughters of plant employees was also solved. Another example was when Hunan Province developed hydroelectric industries that required that the plant be responsible for production of 1,250 kilowatt hydraulic turbines. This was another product that this plant had formerly produced. The plant set to work at once to organize production and soon turned out the product. This year it completed its production quota for hydraulic turbines a full half year in advance to earn the praise of the provincial economics commission. Recently this plant sent a survey team to some provinces and municipalities to seek an understanding of the supply and demand situation. It signed a production contract for 25 1,600-kilowatt hydraulic turbines with the departments concerned in Guangdong Province and has already undertaken arrangements for production. Still another example was that of the T-180 high efficiency bulldozer, which is much needed by the state. Though composed of many parts that are difficult to make, most of the technical skills required are similar to those required for the military goods that this plant is principally responsible for making, and they can be produced alternately with military goods on the production line. Therefore, bulldozers were selected as a future military-civilian linkup to become a long-range product for "taking care of the home front as civilian production supported military production."

2. Perseverance in Self Reliance and Uncovering of Unused Potential To Produce Civilian Goods Quickly

In the process of organizing production of civilian goods, the plant persevered in self reliance, worked to uncover unused potential, improvised, improved, worked arduously to do both a solid and an ingenious job, and greatly accelerated the production of civilian goods. They broke the rules and lay stress on technical means in making preparations. The varieties of civilian goods that this plant was producing were fairly numerous, some light and some heavy, some small and some big, and some easy and some difficult, so the tasks of getting the technical data in order, drawing up technical specifications, and designing work assemblies were profoundly strenuous and complex. They followed the principle of doing the easy first and the more difficult later, adopted the method of dividing up the work and assigning segments to groups, concentrated technical forces somewhat, worked at preparations night and day, alternated work, and fitted methods to situations in working out technical means to shorten the time required for preparation. In preparation for production of civilian goods, they made do with whatever was available to get production underway. Once production was rolling, they strongly felt the workshop areas were too small for the specialized production lines required in the casting of sewing machines, machinery processing, bedplates, baking on of paint, and assembly of machinery. In order to get started as rapidly as possible with the sewing machines, they surmounted difficulties by remodeling the casting forms storehouse, which had been written off as worthless, and the snack bar for the electric instruments shop. They also squeezed some space out of the production line used for military goods to solve their urgent need to guarantee that sewing machine production would soon begin to satisfy some of the demand for production.

The technology for making the head of sewing machines is complicated, with high precision requirements for the individual parts. If multi-purpose machine tools were to be used to do the processing, 37 of them would be required, so they used some old idle equipment in the plant as well as some scrapped equipment, which they turned into 13 specialized machine tools to solve the problem. Now this plant has built a total of seven sewing machine production lines, and except for some equipment that had been transferred from within the plant, the rest of it has been improvised to produce a total of 68 pieces of specialized equipment, all of which performs a function in production. They have adhered to the concept of treating the whole plant as a totality and have worked together with one mind to turn out civilian goods. Not only have the workshops of this plant undertaken production responsibilities, but the machinery repair and tool workshops as well as the affiliated "7 May" plant, all of which have processing capabilities, have also undertaken processing duties in distribution of parts, assembling machines, checking separate lines, and guaranteeing quality.

3. Striving To Improve Quality and Working To Produce Famous Name Products

In its production of civilian goods and military goods alike, the plant worked to put quality first and to produce famous name products. In this regard they adopted five measures: (1) continuous summarization of practical experiences in production; organizing learning visits, strengthening exchange of technical information, and mastering production patterns for civilian goods; (2) launching specialized technical lecture courses to familiarize everybody with the characteristics and uses of civilian goods and to guarantee the crucial link of quality; (3) strengthening of quality controls, strict checks on quality, and maintaining the system of "three checks"; (4) processing parts strictly in conformance with technical standards, and assembling and adjusting equipment in accordance with technical requirements, while constantly seeking to improve devices and improve quality standards; (5) instituting a system of "three warranties," --warrantied use, warrantied repair, and warrantied exchange, with the establishment of special repair stations and open-minded listening to the views of users of products. The rotating table machine-grip tool bit grinder produced by this plant, for example, was suited for the grinding or regrinding of the base, the periphery, the tool grip, the circumference, and the simple chip breaker grooves of hard alloy steel tool bits. This machine tool possesses good multi-purpose capabilities, high precision, good rigidity, and ease of operation. Its quality has attained advanced domestic standards and it earned a prize at a nationwide scientific conference. There are more than 100 of these machines located throughout the country, and people and letters arrive carrying orders for them.

The "Friendship Brand" home sewing machine sells very well within the province, and both last year and this year it was awarded first prize by the Hunan Provincial Ministry of Commerce for quality in the entire province following appraisal by a conference on quality and price. In order to develop further light industrial products, at the same time that this plant was expanding production and further improving quality of this old style "Friendship Brand" sewing machine, it was also test producing a new model portable electric sewing machine. Gradually it will replace old production with these new machines to create a famous name product that will soon test the international market.

4. Basing Oneself on Present Needs and Arranging for Future Production

The combination of military and civilian is not a measure of expediency. By way of further carrying through on the "combination of military and civilian with support for the military through the civilian," and so that there will be a fairly large development of production of civilian goods, this plant has based itself on present needs to stress production of civilian goods, and it has particularly stressed production of light industrial goods to satisfy the needs of the marketplace. At the same time it has cast its eyes toward the future. In view of the production capabilities of the plant, it has settled on bulldozers, sewing machines, and hydraulic turbines as its principal lines of civilian goods for the future. According to planning projections for this plant for next year and the year after, the total industrial output value will increase by an average of 50 percent each year, and profits will average 100 percent increases each year. The proportion of output value that will be attributable to production of civilian goods will be 52.4 percent.

Because this plant went into large production of civilian goods and increased its output value while dividing some of its management expenses, costs for the principal military goods produced fell by more than 8,000 yuan. In order to bring about an overall decline in production costs, this plant proceeded from a readjustment of management to vigorous conservation and striving to lower waste to bring about an increase in production while practicing economy. They strengthened leadership with the secretary and the plant manager themselves taking principal responsibility for accounts so as to strictly control expenses and expenditures. In the course of this year, output value has doubled and redoubled, while expenditures have shown a remarkable decline. As of the end of July a saving in management expenses and workshop operating expenses amounting to more than 4 million yuan, for the whole plant had been made with operating funds used showing a decline of more than 1.8 million yuan below the amount planned.

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URBAN PLANNING, CONTROLLING SIZE OF CITIES URGED

Beijing JINGJI YANJIU in Chinese No 11, 20 Nov 79 pp 53-59

[Article by Chen Weibang [7115 3634 6721]: "Several Questions About Strengthening of Urban Construction"]

[Text] As part of the great journey toward realization of the four modernizations by the people throughout the country, capital construction in our country will burgeon, a great development of new industries and new cities and towns will appear across the vast land, and improvements in existing cities will rapidly accelerate. Good urban planning and good construction for better production and to serve the people possesses major significance in this new historical period. The issues involved with urban construction are extremely great, and this article takes up only the sizes of cities, city planning, and the relationship between the "bones" and the "flesh," discussing them in a superficial way.

1. Control the Size of Large Cities; Build More Small Cities and Towns

Cities are the political, economic, and cultural centers of a nation or a region. At the present time, construction for industrial production is an important element in the formation and development of cities. As our country's industrial construction develops, great development of cities must also occur, and therefore what planning is done about the size of cities is an important strategic matter. Comrade Mao Zedong pointed out repeatedly that it is not good for cities to become too large and that there should be more small cities and towns,[1] prescribing for us urban construction planning that controls the size of large cities with more construction of small cities and towns. In the process of carrying out this policy over a long period of time, we have had abundant positive and negative experiences. While developing production in existing large cities, attention has also been given to controlling the size of cities and the building of a group of small cities and towns and new industrial and mining areas. But as a result of the disturbance and destruction wrought by Lin Biao and the "gang of four," plus deficiencies in our own work, numerous problems continue to exist in the implementation of these plans and control over the size of our country's large cities is inadequate. Presently there are more than 40 cities throughout the country with a population numbering more than 500,000 and the population of these cities accounts for more than 40 percent of the population in cities and towns throughout the country. Among these cities are 13 large ones with populations in excess of 1 million, and the tendency is toward continued expansion in their sizes. Growth of small cities and towns is slow. Because municipal government and public facilities are poor in numerous small cities and town, industries do not want to build plants in them, and lots of problems exist in some industrial cities and towns that have been built. Problems have been such that we have some comrades who continue to maintain that, for the sake of rapid industrial growth, the size of cities should not be limited and industrial plants should continue to be built in large cities. Their main arguments are that in large cities plant construction requires less investment, results are more rapid, and economic benefits are good, while the construction of plants in small cities and towns requires greater investment with results appearing more slowly, and with only indifferent economic benefits resulting. In their view, restraint on the size of cities with the building of more small cities and towns and accelerated development of industry are mutually contradictory. These views are one sided and harmful.

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[1] Please see Ma Meili [7456 3780 7787], "Control the Size of Large Cities: Build More Small Cities and Towns," GUANGMING RIBAO, 16 Dec 1978.

Looked at in terms of a single industrial plant, construction in a large city is indeed more economical in investment required and results are indeed seen more rapidly. Engels has pointed out, "The larger cities become, the more benefits accrue from moving into them."[2] In a certain sense, the growth of industries in cities and the continuous expansion of the size of cities is an inevitable phenomenon in the industrial process. The problem is that too large cities are not good. When cities are too large and industries continue to crowd into them, more harm than good results. The main reason for economies in investment when plants are built in cities is that the city provides the roads, the water supply, the power supply, the heating supply, as well as benefits for cultural life and commercial service facilities. But for the city to be able to serve plants constructed there, it has to increase communications and transportation facilities, build more housing, increase electric, water, heat and severage facilities, and increase the number of commercial outlets. Though some industrial projects themselves build a portion of the required dwellings and other facilities, nevertheless from an overall standpoint, the investment and construction work required for this part of the construction is transferred to the city and does not show up in the industry; consequently there is no saving from the standpoint of the country. Accompanying the continuous expansion in the size of cities comes an ever increasing complexity in the municipal government and in facilities for the public welfare, greater and greater demands on them, and greater and greater expenditures for their construction. Surveys show that investment in public utilities by the municipal government of small cities amounts to only between 2 and 3 percent of total capital investment, but in large cities it amounts to between 5 and 6 percent; in very large cities it increases to more than 7 percent. According to data from foreign countries, for every 1 percent increase in population of a small city or town with a population of less than 100,000, construction expenditures for the city increase 2.3 percent; for every increase of 1 percent in the population of a city of 200,000 or more, expenditure for construction by the city increases 3.4 percent. For very large cities expenditures are even higher.

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[2] Engels, "The State of the British Working Class, " "Complete Works of Marx and Engels," Vol 2, p 301

When cities are too large, not only are the expenditures of the municipal government for public construction high, but a whole series of problems that are difficult of solution follow in train. For example, housing shortages, strained water supply, crowded public transportation, highways and bridges unable to meet needs, etc., which affect not only the projects under construction but also affect production and the life of the people throughout the entire city. Some comrades point out that when municipal construction for municipal purposes is unable to catch up with industrial growth, municipal construction should be accelerated at once in order to satisfy the needs of new industrial construction. Such talk seems plausible, but if things are done in this way then the larger a city becomes the more the more water facilities should be added, and the more water facilities added, the larger the city can become. If uncontrolled growth of the city continues, even greater irrationalities are bound to result. Municipal public utilities in large cities are definitely limited in their ability to provide services to industry, and even with more construction and improvement they are unable to accomodate endless new industrial construction. Once they exceed a certain limit, serious consequences can result. In the case of water supply, for instance, a rapid increase has taken place in the volume of water used by industry in some large cities of our country, and so municipal water resources are gradually drying up. Water sources close to these cities have been so depleted that construction of long pipelines is all that can be done to bring water across a distance of more than 100 kilometers into the city. Some cities intend to sink deep wells to tap underground water, but this greatly increases costs for water service, and since water sources are inadequate, a struggle over the water results between industry and agriculture and between industry and civilian use. In some cities, some newly built plants cannot start production on schedule as a result of insufficient water supplies. Another example is the highways and bridges in large cities that are far from meeting the demands placed upon them by industrial development and growth. In Beijing, Shanghai and Tianjin, there are sections of roads frequently choked with traffic where the average speed is greatly reduced. A survey of several of the major bus routes in Beijing shows that as a result of slower traffic, more than 100 fewer buses run each day. Additionally, when cities are too large and industry too concentrated, environmental pollution becomes intensified; it already directly threatens industrial and agricultural production and the health of the people. Cities that are too large inhibit war preparations and measures to guard against earthquakes and other natural disasters, etc. All of these things must inevitably affect the high speed development of production. As Engels said, "The concentration of an industrial population in large cities is simply a manifestation of the as yet insufficient level of development of industry and agriculture, and it constitutes a further stumbling block to that development."[1]

Contrariwise, plant construction in small cities and towns does not necessarily cost more and is not necessarily slower. With good organization, more, faster, better, and more economical is entirely attainable. For example, in the case of both the large chemical fertilizer plant built at Daqing and the large chemical fertilizer plant newly built at Cangzhou in Hebei, investment was less and the plants went into production more quickly than did industrial projects of the same size that were built in some cities.

Economic benefits cannot be looked at solely from experiences at a single plant or a single unit, but from the standpoint of the state. It is not enough simply to look at the speed of construction; one must also see whether the project made economic sense once it went into production. Socialist economics requires rational apportionment of production forces. Lenin spoke of "rational distribution of our country's industry, placing industry close to areas that produce raw materials and making every effort to reduce processing of raw materials, and to reduce waste of labor in the processing of semi-finished goods, and in every stage in the production of finished products."[2] If a large amount of industry is built in big cities, it will be separated from the areas that produce raw and semi-finished materials and fuel as well as from a large number of consumer areas, necessitating increased transportation and increased costs of products and creating a long-term situation that does not make sense economically. If, however, most industrial projects are placed in small cities or towns, industries will be close to their sources of supply for raw materials and semi-finished products and fuel; the combination of supply and marketing areas will benefit production; transportation distances will be shortened, and costs will be lowered. Therefore, control over the size of large cities with the development of small cities and towns is also in accordance with the socialist economic principles of equitable distribution of industry in every part of the country.

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[1] Engels, "Principles of Communism," "Selected Works of Marx and Engels," Vol 1, p 223

[2] Lenin, "Draft Plan for Scientific and Technical Work" "Complete Works of Lenin," Vol 27, p 296

Engels pointed out that, "the fullest possible balance in distribution of large industries throughout the country is a requirement for the eradication of a separation between cities and rural villages."[3] From the long-range standpoint, equitable distribution of industry, control of the size of large cities and development of small cities and towns is the way to realize a combination of agriculture and industry and of cities and countryside. It gives expression to the long-range direction for the growth of our country's cities under socialism by gradually creating the proper conditions and eradicating the three major distinctions [between town and country, industry and agriculture, physical and mental labor] for the realization of communism.

In order to control the size of large cities effectively and to build more small cities and towns, the state should give full play to the superiority of the socialist system and a planned economy, adopting proper policies and realistic and vigorous measures. The location of industry determines the growth of cities. Therefore, the state should first decide where industries are to be located so that capital construction of industry will be in overall balance not only with the orientation of investment and the size of investment, but also be distributed in a way that makes sense economically both in terms of time and place. It must launch long-range national economic planning and come up with tentative ideas about production forces nationwide over the long range. It should actively launch regional planning work, and it should immediately change the practice whereby each industrial sector decides the location of plant sites for itself, instituting instead a system of unified plant site selection. Furthermore, along with plant site selection should go unified consideration of and proposals for city planning. When old cities are selected as the sites of plants, city planning organizations should participate and their ideas be respected. Both the state and each area concerned should have clear requirements about the scale of growth during a certain period for each city. Very large cities with populations of more than 1 million should have their size severely controlled with generally no further construction of new large or medium size plants being permitted. In specific individual cases, they should be placed in the distant suburbs where satellite cities can be built. Rational development of medium-size cities should be allowed. The majority of new construction projects should be placed in small cities and towns. The state should create the necessary conditions for construction in small cities and towns, and formulate political policies and economic measures to encourage industries to build plants in small cities and towns. They should also reform those policies and regulations that do not help growth of small cities and towns, and encourage workers to settle down in small cities and towns. As modernization of agriculture progresses, a large number of the broad masses of peasants in our country will become a non-agricultural population, which cannot and must not enter existing large and medium-size cities. They should be scattered chiefly throughout the vast numbers of rural villages, cities and towns. They should raise the levels of production techniques in rural villages, cities and towns, bringing them gradually up to the level of modernized cities and towns.

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[3] Engels, "Anti-Duehring," "Selected Works of Marx and Engels," Vol 3, p 336

When we speak of controlling the size of large cities, we mean controlling the size of their population and the use of land; we positively do not mean controlling the growth of production in large cities. A fairly large percentage of industry is located in the cities of our country, and this industry is an important foundation for our country's realization of the four modernizations. It has the extremely important task of developing the production of large cities. However, development of the production of large cities depends principally on uncovering unused potential in existing industries, on innovation and improvement, and on strengthening of management, with reorganization of industry on the principle of cooperation among specialized functions, and on readjustments in the composition of industries. It does not depend on new construction or expansion. Experience has shown that when this principle is adhered to, production can go up with no increase in population or even with a decrease in population. Before liberation the Shanghai textile industry had between 4,000-5,000 plants employing between 500,000-600,000 people. Now the number of plants has decreased to somewhat more than 400 employing several tens of thousands of people, but annual output value has increased more than 8 times. Therefore, it will just not do to call for new or expanded construction with increases in employees and increased use of land whenever development of urban production is raised.

Control over the size of large cities and building of more small cities and towns is not to negate large cities nor to say that the smaller the city the better it is. From the standpoint of technology and economics, cities should be of optimum size (by which population size is chiefly meant). They should be of a certain scale, but just what that scale should be will be different in different countries and at different stages of economic development. How can the optimum size of cities be determined in our country at the present stage? What scale would be most advantageous? These are important tasks related to study or urban economics.

2. Build Cities Strictly in Accordance With City Planning

A city plan is a plan for the development of a city over a fixed period of time; it is an overall blueprint for building a city, and it is also an important foundation for building and managing a city. If a city is to be built well, this crucial link of city planning must first be grasped and understood.

Socialist planned economy and public ownership of city land create extremely favorable conditions for the planned and rational construction of cities. However, during the past several years, the superiority of the socialist planned economy has not been evident in city planning as a result of the disturbance and destruction caused by Lin Biao and the "gang of four," plus deficiencies in our own work. On the contrary, in many cities where there has been construction without city planning, great losses have occurred. In many cities where there is no planning in the construction of industrial areas, and where the layout is chaotic with individual plants and enterprises being a government unto themselves and setting up shop anywhere, a rational organization of cooperation in production is difficult, and a rational arrangement of facilities to serve daily needs is also difficult. Some cities have put plants that produce products requiring high precision in areas where chemical plants are located. There the products suffer corrosion from chemical gases; their quality can no longer be assured, and so the plant is forced to move. Some cities build plants and units according to whim and they emit damaging gases or dust and pollute the water, seriously polluting the municipal water sources and atmosphere. Some cities do not want to institute zoning and they build new plants in residential areas even though they emit the "three wastes" [waste gas, waste water, and industrial residue], pollute, cause noise, and give off offensive odors, thereby damaging the people's health. Some cities even built plants readily subject to fire and explosion in densely crowded areas inside the city, endangering the safety of both the city and its people. City planning is a project of vital and lasting importance. One mistake in the layout can cause damage in the present and adversely affect the long term future, and losses to the economy may be great and far reaching.

A modern city is a complex and many-faceted economic entity composed of industrial, communications and transportation, and cultural and scientific enterprises as well as facilities for living and public utilities. The constant development of modern technology, the mutual relationship, mutual dependence, and mutual interaction of each integral part of a city, and the specialization of production and socialization of municipal service demands increasing precision in this many-faceted economic entity that is a city. Comrade Hua Guofeng pointed out that the composition of the various facilities of a city must be scientific and rational.[1] City planning is nothing less than a scientific and rational laying out of the construction and development of this multi-faceted economic entity. Only when all construction in a city obeys, without exception, the rational provisions of a city plan, with the city being truly built and administered according to plan, can the city's production, construction and various activities achieve high efficiency and high utility, and only then can maximum economic benefits be obtained, and only then can an ideal work and living environment be created for the people. Otherwise, urban construction and development will sink into chaos creating great waste and even destroying productivity. Therefore, city planning should be given the attention it deserves in its strategic task of strengthening the economy and doing social organization work for the state.

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[1] RENMIN RIBAO, 3 Jan 78

Strengthening of city planning requires, first of all, improvement in the level of planning work. City planning is a highly technical economic task that is of a policy nature and multi-faceted in character. It should diligently implement the line, the policies and the programs for national construction, reflect the policies of serving production and serving the people's livelihood, and correctly handle the relationships between cities and rural villages, industry and agriculture, production and livelihood, requirements and possibilities, the short-term and the long-term, new construction and rebuilding, ordinary times and war time, the partial and the total. It should strive to make economic sense, help technical advance, and guarantee the smooth accomplishment of all construction in the city with good economic results.

The majority of cities in our country have already drawn up city plans, but most have not diligently carried them out. For many years construction in the cities of our country has been done through decentralized investment of capital and decentralized construction. Under this system, fragmentation and disjointedness in planning occurs. The size and locations of industrial and communications and transportation projects has been determined by the individual units with planning units in cities having no way of making the necessary integration of the various construction projects, and even in civil construction and in public utilities, the planning units have been unable to plan in a unified way for unified construction. How much more difficult it has been to devise an attractive environment and an artistic appearance. The conflict between such decentralized investment and unified construction in the cities has endured for a long time without resolution, and it constitutes the most fundamental reason why city planning has been difficult to institute. At the same time, this system has also helped the growth of "big and complete" and "little and complete" in units, and self-devised systems for welfare in daily life. It has also caused inequities with some bearing hardships while others enjoy pleasures, and it has caused a lot of waste. Socialism is supposed to bring about a socialization of urban services, but this system leads to "enterprises running society," with each unit trying to expend large amounts of human and material resources to carry out capital construction and management of service facilities, preventing a concentration of resources to carry out production. Because of the decentralized investment, frequently no one makes arrangements for public facilities in cities with resultant deficiencies in construction and other evils.

Many years of accumulated experiences in urban construction shows that the prevailing system of capital construction in cities must be conscientiously reformed. It is proposed that any industrial project to be constructed in a city, no matter under whose jurisdiction it falls and no matter its size, must go through an overall balancing by the planning unit of the city concerned, with unified arrangements being made on the land to be used for the construction, so that all construction requirements will be satisfied and so that a rational layout of the city may be assured. As regards civilian construction and public facilities built by the municipal government, there should be broad application of the "six unifieds," namely unified planning, unified investment, unified design, unified construction, unified allocation, and unified management. In this way not only will construction be carried out more, faster, better, and more economically according to the city plan with the needs of the enterprises, units and the city being assured, but all enterprises and units will be able to concentrate their energies on production. In recent years our country has had very good results from "unified construction" of dwellings in some cities. Even better experiences have occurred in foreign countries. Urban construction in Korea is one example in which capital and materials for housing, public buildings construction, public utilities, and municipal government construction projects were included in the state economic plan and the annual plans for the basis of city planning, and were directly issued by the state to the administrative committees in provinces and municipalities for unified organization of construction. Unified construction assures that construction will be carried out in the proper sequence, beginning underground and moving to the surface of the ground. Construction in new areas requires that underground conduits for water, drainage, electric power supply and heat supply be built first, with roads being built afterward, followed by construction on top of the ground. Unified construction assures that construction will be done strictly according to the city plan section by section, street by street, and lane by lane, to reduce construction costs, hasten the progress of construction, and rather rapidly change the countenance of the city. The Korean experience shows that unified construction is a good way to build cities according to plan more, faster, better, and more economically. Romania and Yugoslavia also have good experiences in this regard, and they have shown outstanding accomplishments in urban construction. In the 30 years since the founding of our republic, much civilian construction and municipal government construction of public facilities has taken place in cities, but because there has been no "six unifieds," investment results have been poor, city planning has been incapable of implementation, and changes in the countenance of cities is far, far away from attainable levels. Now is the time to change this backward system for good. During the period of readjustment when the economic system of the country is undergoing reform, we should conscientiously reform the existing construction system, closely meshing capital construction plans and city planning, while at the same time endeavoring to institute the "six unifieds," to put an end to the long enduring chaos in urban construction and advancing our urban construction into a new stage.

Once a city plan has been approved, it should have the force of law, remain relatively intact, and not be altered or contravened capriciously by any unit or individual. Only in this way can the city plan direct construction and administration of the entire city. For a long time the leadership in many places has substituted individual desires for city planning, and "planning, planning is not the equal of official standing" was a common phenomenon. Some sectors and units destroyed city planning at will in pursuit of their own convenience. In order to change this state of affairs, an important measure to be adopted, in addition to giving full play to democracy and strengthening education, is to set up a legal system to back city plans and construction requirements necessitating legislative and judicial measures to insure implementation of city planning. The state should formulate laws pertaining to city planning and handle important issues contravening such planning through economic courts.

The most important task in city planning is to determine the character of the city. On the basis of historical, natural and economic characteristics, a city may be divided into an administrative center, and cities for heavy industry, light industry, commerce, harbors, mines, tourism, and science. Determination of the character of a city possesses important significance for the construction and development of the city. For example, along with the development of tourism in our country, a quickening of planning and construction in scenic tourist cities has been placed on the agenda. Tourist construction should be closely combined with city planning and construction. To do this, it is necessary first of all to designate certain cities as scenic tourist cities such as Guilin, Hangzhou, Suzhou, and Chengde. The main function of these cities should be to handle tourism well. Of course, they must at the same time also put emphasis on construction for industrial production, but construction for industrial production must not be allowed to interfere with or damage the development of tourism. For example, no plants or units of any kind that interfere with the scenery should be permitted to be constructed among the scenery of Guilin, on Xihu in Hangzhou, in Yuanlin in Hangzhou, or around the resort mountains in Chengde. Measures should also be taken to remove, insofar as is possible, all units that presently damage this scenery. Some comrades fear that development of tourist cities is to create consumption cities, but such concerns are not necessary. Tourism is also a form of production; it is "smokeless industry" that can create wealth for the country. In the planning of tourist cities, most important is care in the placement of industrial construction, the selection of certain kinds of industries, the size, and the location. All this must be done on the principle of no damage to the scenery and being able to promote tourism. The city's special characteristics should be maintained. There should be meticulous planning and designing with construction of various tourist facilities, conscientious preservation and construction of parks and scenic areas, and every effort made to improve municipal transportation and fully develop commercial service facilities. If tourism is to be made to develop rapidly, things must be done according to economic laws so that these cities will reap the economic benefits of tourism development and steadily increase them. The state should support the needed construction with funds and materials particularly since cities lack the resources required for the job. A proportion of the revenues derived from tourism should be used for the construction of parks and public facilities in these cities in order better to promote the development of tourism.

3. Clearly Distinguish the Relationship Between the "Bones" and the "Flesh"

Speaking about experiences with construction during the First Five-Year Plan, Comrade Mao Zedong made the profound observation in 1956 that "a problem has existed in construction during the previous several years, which is as some comrades have said, a concern only for the 'bones' with little concern for the 'flesh.' Plants are built and machinery and equipment installed, but there is no corresponding municipal construction or service facilities. This will cause great problems for the future."[1] This tells us that it will not do in construction to have only "bones" but no "flesh." Providing only for plant buildings, machinery and equipment, but making no provision at all or inadequate provisions for workers' dormitories, roads, underground water mains, postal services and electricity, restaurants, hospitals, schools, and cinemas results in a lack of housing once the plant has been finished; inadequate transportation and communications, no barbers or tailors, inconveniences in sending children to school, going great distances to buy grain and vegetables etc. What kind of a job is this? Therefore, when construction is undertaken, associated service facilities and facilities for public welfare must be part of the planning with a proper handling of the relationship between the "bones" and the "flesh."

However, after Chairman Mao had drawn attention to the need to be concerned about the relationship between the "bones" and the "flesh," the proportion of "flesh," which is to say the proportion of investment in non-productive construction, did not rise; it fell. Not only was the rate of fall large, but the fall continued over a long period of time. During the 10 years of rapacious conduct by Lin Biao and the "gang of four" the overall balance in the planned proportional development of the national economy was destroyed by their recklessness. Their efforts to put the clock back caused an even more dramatic disparity in the proportion between "bones" and "flesh."

In our country, municipal construction encompasses the construction and administration of dwellings, cultural facilities and facilities for the public welfare, municipal government projects, public utilities, forestation of parks and woodlands, and environmental sanitation. These are efforts that are inseparable from production and serve the livelihood of the people. The relationship between "bones" and "flesh" is revealed to a large extent in the relationship between industrial construction and municipal construction. A serious disparity in the proportion of "bones" and "flesh" will be revealed most pointedly in the numerous "bills owing" for municipal construction and the great "deficiencies." For a long time, for example, there have been great increases in the work force in cities, but little new construction of housing. Existing houses were neither repaired nor maintained, so housing is generally in short supply. The amount of running water is inadequate; water pressure is insufficient; the quality of the water is bad. Roads are laid out irrationally; they are not well built; people are too numerous for the vehicles available; and public transportation is crowded. Drainage is blocked, with numerous cities suffering flooding from accumulated water during rainstorms. Commercial services are scant. Middle school and primary school buildings are insufficient; cultural and medical treatment facilities do not suffice, etc. This affects production; it affects the livelihood of the people; and it even affects the relationship between the party and the people; it affects stability and unity; and it has become an important issue in the development of the country. Once the "gang of four" was smashed, the Party Central Committee under the leadership of Hua Guofeng gave strict attention to municipal construction, emphasizing construction of facilities for living and public welfare and public utilities in cities, but making up for these "deficiencies" and striking a balance between the "bones" and the "flesh" will take great effort and arduous toil.

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[1] Mao Zedong, "Oppose Bourgeois Ideology Within the Party," "Selected Works of Mao Zedong," Vol 5, p 92

A good job of handling the relationship between "bones" and "flesh" requires a proper understanding of the intrinsic relationship between high speed development of the economy and planned proportions. Some comrades hold that high speed means full efforts directed toward construction for production, and that any emphasis on the proportion of "bones" to "flesh" will dissipate efforts and adversely affect speed. When they think about problems, plan, and act, they usually see only production but not living; they pay great attention to industrial construction but ignore municipal construction; and they even take investment funds that should be used for municipal construction and use them for production. Such views and actions violate the objective laws of economic development, and they are also the principal reason for the serious disparity in the proportions of "bones" and "flesh." High speed development of the national economy is in the best basic interest and best long-term interest of the people of this country, but to achieve this high speed, the laws of planned proportion must be adhered to. A definite proportional relationship exists between production and living, industrial construction and municipal construction, "bones" and "flesh." Only when this proportional relationship is observed and an overall balance maintained can there by coordinated development, and only then can there be high speed. Contrarily, if these laws are ignored and there is no overall balance maintained or no planned proportions, but only "bones," in the end not only will speed become impossible, but even normal production will be difficult of accomplishment. For example, water is a prerequisite to large-scale industrial production, and when municipal water resources dry up and water is insufficient, industrial production is seriously threatened. Municipal construction directly ramifies into the lives of the people. If the broad masses of the work force live in cramped conditions for long periods of time, cannot sleep, spend long hours on crowded buses going to and from work, are forced to queue to buy vegetables after they return home, have to queue to get water, are unable to get any relaxation, and have serious fears at home, can they energetically continue to work hard for socialism for a long period of time? When living conditions for workers are very poor and they return home where no conditions exist for the study of culture or technology, just how can technological levels be rapidly improved? Comrade Mao Zedong said, "Our emphasis must be on developing production, but we must give attention both to developing production and improving the livelihood of the people."[1] This requires that we stress both production and livelihood at the same time, walk on two legs, and not be lopsided. This we should bear in mind and diligently practice.

Correct handling of the relationship between "bones" and "flesh" directly bears, even more importantly, on the fundamental question of whether we can adhere to the basic economic laws of socialism. Stalin pointed out that, "guaranteeing maximum fulfillment of the material and cultural requirements for the normal growth of a society is the goal of socialist production; steady growth and constant improvement of socialist production on a foundation of high technology is one method of achieving this goal." "The fundamental economic laws of socialism are like this."[2] In the realization of the four modernizations, and in carrying out construction, we have only a single goal, and that is steady improvement in the material and cultural life of the people. If, while we are developing production and keeping a regular balance between the "bones" and the "flesh," we are also regularly improving the standard of living of the people, the masses will regularly sense from their own personal experiences the superiority of the socialist system and will consequently more zealously enter into construction for production. Contrarily, to blindly emphasize construction for production and ignore non-productive construction for a long period of time, with no gradual improvement taking place in the livelihood of the masses despite their assiduous labors, is a direct contravention of the basic economic laws of socialism, a departure from the goals of socialist production, and can only cause us great damage both economically and politically in the future as well.

Serious disparity between "bones" and "flesh" is very much related to our economic work having been influenced for a long period of time by an extreme leftist line. The likes of Lin Biao and the "gang of four" criticized facilities for livelihood and welfare as "welfarism," and they considered municipal construction to be "revisionism," and criticized it as "increasing differences between cities and the countryside," making it impossible for quite a few comrades to handle the correct relationship between living and production. They did not dare boldly and assuredly emphasize construction of facilities for living. Even today some comrades have room in their hearts for only industrial construction and not municipal construction, and a place for production but not for living. In numerous places there has still been no working out of a rational proportion between productive construction and non-productive construction. While examining an overall plan for Beijing municipality in 1956, Comrade Zhou Enlai profoundly observed that, "current investment is not equitable either; the consequences of investing only in office buildings and plants to the neglect of dormitories and stores is bad. Once production has grown, what will living be like? The result will be a waste of time and a waste of manpower with very low effectiveness that is not worthwhile. We would rather build fewer plants and government offices and think of ways to improve everybody's efficiency." Today when we review Premier Zhou's guidance, we feel doubly pleased! In short, we should penetratingly criticize the extreme leftist line promoted by Lin Biao and the "gang of four," correctly understand and handle the dialectic relationship between production and living, seek through production gradually and generally to improve the livelihood of the people, adhere to stressing both production and living, and positively not lopsidedly care only about production with no concern for the living conditions of the masses.

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[1] Mao Zedong, "Oppose Bourgeois Ideology Within the Party," "Selected Works of Mao Zedong," Vol 5, p 92

[2] Stalin, "Economic Problems in the Socialism of the USSR," RENMIN CHUBANSHE, 1961, p 59

In view of the prolonged severe disparity in the proportion of "bones" to "flesh," in our current readjustment of the national economy we should make the coordination of the proportion of "flesh" and bones" a major task that will be truly stressed and done well. Of course, given the limitation of the country's financial and material resources, an excessive amount of investment in providing for "flesh" will not be possible in the short term. The large volume of problems that have accumulated in municipal construction for numerous years cannot be suddenly solved; they can only be provided for through unified planning and gradually be solved. This requires that when we start municipal construction, careful attention should be given to costs so that the limited funds of the state can be put to the greatest benefit. Currently it is necessary to emphasize construction of housing for the work force, trying to solve problems of water supply, sewerage disposal and drainage, a shortage in public transportation, commercial services, and inadequate numbers of middle and primary school buildings. We must diligently take in hand maintenance, repair and protection, getting the most out of existing facilities. Newly constructed industrial cities and towns should, from the very outset, provide for facilities for public use and public welfare as an integral part of their construction. In short, we should diligently solve the pressing needs of the masses, provide timely help, avoid unnecessary frills, and be sure to stay away from buildings of all kinds that have nothing to do with the masses of the people. Insofar as possible, we must use every manner of means to take care of construction that meets the pressing needs of people's lives; what cannot be done for the time being should be clearly explained to the masses and every effort be made to create the conditions whereby solutions can be gradually found in the future.

There are still very many problems requiring study and solution for the enhancement of municipal construction in our country. If only we will diligently summarize experiences since the founding of our republic, persevere in practice being the only criterion for testing truth, liberate our thoughts, boldly innovate, make use of beneficial foreign experiences, give full play to the superiority of the socialist system, and truly act in accordance with objective laws, we will certainly be able to build our cities gradually into modern cities of socialism.

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PROFITS, COMPETITION IN SOCIALIST ECONOMY DEFENDED

Beijing JINGJI YANJIU in Chinese No 11, 20 Nov 79 pp 74-80

[Article by Xiao Zhuoji [5135 3504 1015]: "The Role of Average Rate of Profit in the Socialist Economy"]

[Text] Do average rate of profit, average profit, and production cost continue to exist and play a role in the socialist system? Economists in our country have always held different views on this.[1] Some comrades maintain that these are economic categories belonging to capitalism, and that they simply cannot exist in the socialist system. I maintan that such views are incorrect. Even though the system of ownership of the means of production of capitalism have been eradicated under the socialist system, a commodity economy still exists, a need for cost accounting still exists, relationships among the material welfare of the state, enterprises, and individuals still exist, and these determine the form in which excess labor and excess products will be expressed in currency. They determine, as well, that average rate of profit, average profit and production cost must exist and play a role.

Of course, just as socialist profit and capitalist profit are fundamentally different, the socialist average rate of profit and the capitalist average rate of profit are also qualitatively distinct. Here, the average rate of profit in no way reflects "the extent of exploitation of total labor by total capital," but it reflects the extent of excess labor (analagous to the former accumulation of labor) in the form of profit provided to society at a definite period by all laborers from material production sectors (termed ownership by all the people, hereinafter). Excess labor is no longer taken by capitalists free of charge, and it is no longer distributed anew among various sectors of capitalists, but instead becomes the joint wealth of all the working people. In the capitalist system, the average rate of profit is spontaneously formed through competition among units, and the competition averages out the different rates of profit of different units into a general rate of profit. It also permits each capitalist to obtain an average rate of profit commensurate with the size of his capital. In the socialist system, the average rate of profit is not spontaneously formed; it is a planned formulation of the state based on the total amounts of production capital used by each unit and each enterprise, improvements in production and in the rate of labor productivity, the total amount of labor provided to society by laborers, and the level of remuneration to labor.

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[1] Among those in our country who early raised the issue of the role of average profit and production price in a socialist society were Sun Yefang [1327 0396 2455], "On Value," JINGJI YANJIU No 11, 1959; Yang Jianbai [2799 1017 4101], "Problems in the Balance of the National Economy and Production Prices," JINGJI YANJIU No 12, 1963; and He Jianzhang [0149 1696 4545] and Zhang Ling [1728 3781], "Thesis Concerning Production Prices in a Socialist Economy," JINGJI YANJIU NO 5, 1964. For a long period of time, this theory has been mistakenly criticized as a revisionist theory. Now there should be a penetrating discussion of it on the basis of the policy of letting a hundred flowers blossom.

The Role of Average Rate of Profit in the Socialist Economy

Socialist average rate of profit is surplus products converted to the form of currency that have been created by the total labor of the material production sector at a particular time, and the ratio of total production capital.[3] It reflects, in an overall way the fruits of each sector of the national economy and the economic activities of all enterprises for this period. Calculating and applying the average rate of profit has a major function in the development of the socialist economy.

1. The average rate of profit embodies important forms of the law of value.

Commodity production and the law of value are prerequisites to an average rate of profit. Unless there is production of commodities with an exchange of commodities among producers, the labor expended in the production of commodities "will not be shown as the value of these commodities, and it will not be shown as a property of certain goods."[1] The surplus labor or surplus products contained in commodities cannot be converted into currency and be expressed as profit.

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[3] The surplus products in the form of currency created by workers in material production units include profits and tax monies. For ease of explanation, this article assumes that the state levies no taxes on enterprises other than land (and mines) taxes on enterprises where natural conditions are quite good. Thus total production price figures for the society and total value for the society will be the same; total profit figures (including land taxes) will be the same as the value of surplus products.

Marx, "Critique of the Goethe Program," "Selected Works of Marx and Engels,: Vol 3, p 12

Once the average rate of profit has been formed, the market price is no longer the basis of value; instead the production cost, consisting of cost price plus average profit, is the basis. Production cost is nothing more than another form of the price of a commodity. In terms of the whole society, total figures in the production price of a commodity are equal to the total figures for the price of that commodity; and the total price of surplus products are equal to the total figures for average profit. Under conditions in which the average amount of capital used for products is identical, if the expenditure of embodied labor and human labor for products from production units in each enterprise are the same as the average expenditure of labor in society sectors, the individual rates of profit will then be identical with the average profit. If expenditure of labor in enterprises exceeds the average expenditure of society, the individual rates of profit will then be lower than the average rates of profit. Conversely, when the expenditure of labor by enterprises is lower than average expenditures in society, individual profit rates will then be higher than the average of profit. It may be seen that average rate of profit is an important form for expressing the law of value. It impels each enterprise to strive to conserve embodied labor and human labor, to reduce costs, and to raise individual rates of profit.

2. Average rates of profit are the most appropriate overall index of the balance of the results of economic activity by enterprises.

Socialist enterprises under the ownership of all the people are relatively independent accounting units. When the state allocates a specific amount of production capital to an enterprise, not only does it require that the enterprise produce specific kinds and amounts of things for society with a use value, but it also requires that enterprises use income derived from their own marketing of goods to make up for the embodied labor and the capital expended in production and provide society with surplus products so as to be able to satisfy requirements for expansion of further production and other social needs.

In the relationship between the state and the enterprise, the state acts as the owner of production capital which allocates a fixed amount of capital to the enterprise. The enterprise acts as a relatively independent accounting unit, accepting the capital for the needs of production. In one sense the relationship between the two is a relationship of borrower and lender, which is a relationship of exchange of money for goods. The amount of profit that the enterprise provides the state must be an exact proportion of the capital put to use by the enterprise. The larger the amount of capital put to use, the greater must be the amount of profit supplied. No matter how different the use value of the production of separate enterprises may be, and no matter how different the scale of production and the amount of capital put to use in production, and no matter how the capital is used or how quickly the capital turns over, the production capital used by each unit during an identical period of time must provide the state with an equated amount of profit. If an enterprise's individual rate of profit is higher than the average rate of profit, that shows that it used the same amount of production capital to provide the state with surplus products in excess of average levels in society and made a greater contribution. Therefore, the average rate of profit is a common yardstick for measuring the results of economic activity of each unit and each enterprise, impelling them to itensify cost accounting and reduce the amount of capital used per unit of product, and to make a greater contribution to society.

Though the economic activities of enterprises are multi-faceted, the state can use amount of production, quality, costs, rate of labor productivity and such indicators to make separate checks. These indicators are, however, first of all, somewhat limited. They can reflect only one side of an enterprise's activity; they cannot totally reflect the overall picture. Second of all, these indicators lack comparability. Inasmuch as the objective conditions of the nature of production and the size of production differs from sector to sector and enterprise to enterprise, these indicators cannot be used as a unified indicator in balancing the results of their economic activity. Furthermore, average rate of profit indicators not only can reflect the overall picture of an enterprise's economic activity, but can also compare the effective use value from capital in each sector and each enterprise. A picture of production engaged in at any given time by a sector or an enterprise, such as whether production quotas have been completed, whether quality of products meets specifications, whether labor productivity has increased, whether costs declined and whether turnover of capital is normal will be ultimately revealed in the profits of the enterprise. Thus, from a comparison of individual rates of profit with actual rates of profit, the effectiveness of economic activity of individual units and enterprises can be fairly accurately judged.

3. Average profit rates are a powerful lever in getting enterprises to improve technology and improve the labor productivity rate.

Inasmuch as materials, technology, and equipment differ in units and enterprises where the amount of production capital used is identical, the organic formation of capital will differ. If market price is based on value, in units and enterprises where the organic formation of capital is high, the amount of profit obtained from the same amount of capital will be comparatively little and individual rates of profit low. Conversely, in units and enterprises where organic formation of capital is low, the amount of profit obtained from the same amount of capital will be comparatively more and individual rates of profit high. This is not advantageous for improvements in technology or raising the level of materials, technology and equipment in individual units or enterprises, and thus it obstructs increases in the productivity of labor.

Once the average rate of profit has been formed with the market value of products being based on production cost, the situation is entirely different. Now, even though organic formation of capital may be different in different units and enterprises using identical funds for production, the value of products will be different, but in terms of cost price plus product production costs formed by average profit, they will be the same. When market price is founded on production cost, objectively this will assure that under normal circumstances each unit and each enterprise will be able to make an average profit. No matter whether the organic formation of capital is high or low, an average profit commensurate with the proportion of production capital advanced will be obtained.

Furthermore, in enterprises within the same sector where organic capital formation is high, because the rate of labor productivity is high and the cost price of individual products lower than the cost price in society at large, under conditions in which the average rates of profit are identical and production price of individual products is lower than production prices in the society at large, individual rates of profit in these enterprises will be higher than in society at large, and profits in these enterprises will exceed quota. This must inevitably play an active role in encouraging each enterprise to adopt advanced technology, improve its substantive technology and equipment, and promote development of social productivity.

4. The average rate of profit is an important basis for setting plans for further social production and plans for investments in certain sectors.

In order to undertake expansion of further production, there must be, in material terms, additional means of production and means of consumption. In value terms, there must be an accumulation of production capital. Surplus products are the source for accumulations. Under the socialist system, when the state sets forth plans for expansion of further production, it must take account not only of requirements but of capabilities as well. First of all, it must consider the size and speed of growth of surplus products provided by material production sectors. Of course not all profit is used in the expansion of further production. Profit does not equal accumulation. Profit acts ad the principal part of the funds of a society that have derived from withholding from the total product of the society. It can both constitute accumulation capital for the expansion of further production or it can constitute consumption funds for the society or a reserve fund, or even be used for general administrative expenses. However, profits are principally used as accumulation funds. The amount of movement in average rates of profit reflects the dynamic effectiveness of the use of production capital at a particular period. The total sum of the average rate of profit of a society, as figured from the average rate of profit, reflects the total sum of surplus products in the form of profits. In the formulation of plans for the expansion of further production, only by using this as the major foundation can the state erect planning on a basis of full guarantees of material.

In the distribution of proportional investment of production capital to each sector, the average rate of profit is also a major basis. Naturally, distribution of socialist production capital rests principally on the proportional needs of high speed development in the economy. However, so that production capital will be equitably used and in order to get maximum benefits from investment, the amount of capital used by each sector and the rate of profit on it must be considered. Active development of those production sectors in which the amount of capital used is fairly small while individual rates of profit are relatively high benefits increased accumulation and expansion of further social production.

5. The average rate of profit is the mainstay of implementing the principle of material welfare in enterprises.

Since the average rate of profit is an overall indicator for measuring the results of economic activities of enterprises, and since it is a common yardstick for comparison of the size of contributions to the state by individual enterprises, the state can use the average rate of profit as a criterion for rewards and punishments for enterprises. If the individual rate of profit of an enterprise is the same as the average rate of profit, the enterprise should be given a specific proportion of profits to keep for use in rewarding the work force in the enterprise, for improving the collective welfare of the work force as a fund for improving the working conditions of the work force, and even to meet needs in uncovering unused potential, updating, improving, and doing scientific research. If the enterprise's individual rate of profit exceeds the average rate of profit, a proportionately larger amount of the profit should be given to the enterprise to keep, with the amount to be kept commensurate with the increased profit. Conversely, if the enterprise's individual rate of profit is lower than the average rate of profit in the society, the proportion of profit that the enterprise may keep should be lower than average. Of course, should an enterprise show no profit or even have a deficit, not only can there be no "keeping," but the enterprise must assume economic responsibility. The average rate of profit, like labor, acts as a common yardstick in measuring the contribution of each enterprise to society and in balancing the amount of rewards taken from society. The more profit, the more obtained; the less profit, the less obtained; no profit, nothing obtained. This better combines the welfare of the state, the welfare of the enterprise, and the welfare of the individual, and it impels the leadership in enterprises and the whole body of workers to be concerned about the results of the enterprise's economic activity, and to strive singlemindedly to accelerate socialist economic construction.

How To Apply Accurately Average Rate of Profit

The rate of profit of any individual sector or enterprise may be higher or lower than the average rate of profit. Factors bearing on individual profit rates of enterprises are numerous. Among them are the factors of the competence of the management of the enterprise and the production zeal of the workers, which are subjective factors. Additionally, there are the natural conditions surrounding production, the amount of capital used by the enterprise, and government pricing policies, all of which are important factors not determined by the enterprise itself. These are objective factors.

1. Land (or mine) taxes must be levied on those enterprises where natural conditions are quite good.

Within the same sector, and within different enterprises producing the same kinds of products, natural conditions are by no means identical. In the case of the mining and agricultural sectors, the natural richness of the land (or the mines) has a major bearing on the labor productivity rate of an enterprise or its individual cost prices. If a society requires the products produced by an enterprise where natural conditions are very bad, in order to guarantee that these enterprises will be able to obtain an average profit, the social production price of these products must be determined by the individual production costs of these enterprises. Thus, enterprises with relatively good natural conditions are placed in a beneficial position. Everything else being equal, the production costs of their individual products will be lower than the production costs of society as a whole and so they will be able to make excessive profits, i.e. the individual production cost for products will differ from the production cost for the society as a whole. Suppose there are three oil extraction enterprises located in places where natural conditions differ. For an investment of 10,000 yuan funds, crude oil production for enterprise A is 50 tons, for enterprise B 100 tons, and for enterprise C 200 tons, for an average rate of profit of 20 percent. The individual production cost of the crude oil is 240 yuan for enterprise A, 120 yuan for enterprise B, and 60 yuan for enterprise C. If the production cost of the society is determined by the individual production cost of enterprise A, enterprise B will make an excess profit of 12,000 yuan, and enterprise C will make an excess profit of 36,000 yuan, while enterprise A will make only an average profit.

In the socialist system, land (and mines) is property under the ownership of all the people. In order to compensate for the effect of different natural conditions on the individual profit rates of different enterprises, a land (or mine) tax must be levied on the basis of the richness of the land (or mine). In the above example, enterprise A would not have to pay any tax, enterprise B would be assessed a land tax of 120 yuan on each ton of crude oil produced and enterprise C would be assessed a land tax of 180 yuan per ton of crude oil produced.

2. Actual rate of profit by individual enterprises must be calculated from funds used.

Part of the production capital used in a socialist enterprise consists of fixed production capital, and part consists of working production capital. Fixed production capital (or assets) consist of machinery, plant buildings, and such work means in material form. They begin when the production process goes into operation and they last until they are entirely used up. Throughout, they maintain an independent material form while at the same time their total material form participates in the production process. A part of the value that they use up by wearing out in the production process is gradually shifted to the new products they help produce, and they are an element in the cost of making new products. A part of their value is fixed in the production process. Therefore, "over a longer or shorter period of time their value is distributed into a group of products that have been produced by a constantly repeated labor process."[1] Thus, there is a difference in the amount of fixed assets in use and the amount of fixed assets expended. The fixed assets in use are greater than the fixed assets expended. Working production capital is part of the production process and its entire value enters new products, forming another element in the cost of new products. However, each enterprise requires a certain amount of emergency and working capital, therefore, there is also a difference in the working capital in use and the working capital expended. In short, the production capital used by an enterprise is greater than the production capital expended.

The ratio of capital expended to capital used in each sector and enterprise differs at any given period of time. Generally speaking, the proportion of capital expended in sectors and enterprises where material and technological conditions are quite good is relatively small; in sectors and enterprises where material and technological conditions are relatively poor, the ratio of capital expended is relatively large. In that case, should the actual rate of profit attained by an enterprise be calculated on the amount of funds expended or on the amount of funds used? There is no question whatever that it should be calculated on the funds used. In a discussion of average rate of profit, Marx pointed out, "If this rate of profit is expressed in absolute terms, it becomes nothing more than the proportion of capital paid in advance within the framework of the society by the capitalist class (annually) from the surplus value of production."

Stripped of its capitalist nature, this passage is also applicable to socialism. The "capital paid in advance within the framework of society" spoken of here comprises the totality of capital paid in advance for all fixed assets and working capital. From the standpoint of the whole society, this is the total investment by the state in material production sectors. From the standpoint of these sectors and enterprises, it is the total amount of production capital in use. In order to determine the average rate of profit in a society, one must compare total amount of surplus product with "capital paid in advance within the framework of the society." To determine the individual rate of profit actually attained by an enterprise, the total capital used by the enterprise should be used as the basis. By using the rate of profit on capital to balance results from economic activity by each sector and each enterprise, the influence of objective factors deriving from different uses of capital on individual profit rates in enterprises can be eliminated. This is because the ratio between capital used and capital expended is different. In fact, it is because the amounts of embodied labor used by each worker differ and the levels of technology in enterprises differ. Generally speaking, the better the material and technical conditions, and particularly the better the implement of labor such as machinery and equipment, the less will be the ratio of capital expended in the capital used. Material and technological conditions determine to a very large extent the labor productivity of each enterprise, and thereby determine the cost price of products from an enterprise or a sector. When a lot of capital is used, material and technological conditions are good, the labor productivity rate high, production price per unit of product will be low and the enterprise can make excess profits. Consequently, only through use of the rate of profit from capital to balance the actual results of economic activity by an enterprise can the influence of different amounts of capital used on an enterprise's rate of profit be eliminated, the total application of capital by an enterprise be better reflected, the competence of an enterprise's management be checked, the enterprise be impelled toward conservation of fixed assets, turn over of working funds be accelerated, the blind competition for capital and equipment on the part of some enterprises be overcome, and the lack of economic responsibility be overcome as well, so that production capital will achieve more rational use.

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[1] Marx, "Das Kapital," Vol 2, p 177

[1] Marx, "Correspondence With Engels (30 April 1868)," "Complete Works of Marx and Engels," Vol 32, p 73

3. Market price of products must be founded in social production price.

Whether market prices of products are high or low has a great bearing on the rate of profit of enterprises. Under conditions in which prices are uniform throughout the land, if market prices (either ex-factory prices or internal wholesale prices) tend to rise or fall, the consequences are not beneficial for cost accounting in enterprises, nor can the average rate of profit indicator be used as a common yardstick in measuring the results of the economic activities of enterprises. For example, at prevailing prices, hot rolled broad sheet steel costs 560 yuan per ton. If one more industrial process is added to make it into narrow sheet steel, the per ton cost declines, conversely, to between 465-535 yuan. Since pricing is irrational in this case, the production of narrow sheet steel is adversely affected, and the rate of profit indicator is made to lose its meaning in measuring the results of the economic activity of enterprises. Only when the social production price is the basis for setting market price does the average rate of profit indicator have any real significance.

Production price of products are cost price plus average profit.

The category called cost price continues to have significance under socialism. Once an enterprise has marketed products, it must first get back its cost price before it can recoup the various production factors that are part of expenditures for production and continue simple additional production. Generally the cost price as determined by elements that go into the production price must be determined from average levels in the particular sector. Only in this way can there be any real assurance that each enterprise will, under average production conditions in the society, be able to offset outlays with income, and "constantly buy back the various production elements that were expended in the production of products."[2]

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[2] Marx, "Das Kapital," Vol 3, p 33

Average profit is the product of the average rate of profit and the capital used. The capital used here must also be determined through average levels in the sector, i.e. the average amount of capital used per unit of product.

The production price consisting of average cost price in the unit + average rate of profit X average amount of capital used in the unit is the social production price. The individual production price of goods from each enterprise may be less than or greater than the social production price. Here the average rate of profit is a constant, and the individual cost prices and individual amounts of funds used are variables. For individual production prices of an enterprise to be lower than the social production price, individual cost prices must be lowered and the amount of capital per unit of product has to be lowered.

Market price must be based on social production price, and not on individual production price. Otherwise there can be no unified market price, and a situation would be created in which whenever an enterprise's production costs were high, individual production prices would be high and the market price would also be high. Were this to happen, no one would be concerned about lowering product costs, and the result would inevitably be creation of enormous waste of human resources, material resources, and financial resources. Market prices based on social production prices place different sectors and enterprises in the same economic position, requires them, under normal circumstances, to be able to use their own incomes to offset expenditures for production, provides the state profit as well, eradicates a situation of alternating profits and losses or feast and famine in enterprises created by irrationalities in market prices, impels every enterprise to try to lower individual production prices, and improves the competence of management.

To summarize the foregoing, once the influence of the objective factors of richness in natural endowment, amount of capital used, and market price that give rise to individual rates of profit have been eliminated, whether the individual profit rate of an enterprise will be high or low will be determined by the competence of its management. Under these conditions, use of average rates of profit criteria as a common yardstick for measuring the results of the economic activities of enterprises is theoretically scientific, and practically beneficial in improving the management competence of enterprises and in promoting development of social productivity.

Competition Among Socialist Enterprises

As was said above, capitalist average rates of profit are spontaneously generated through competition among sectors. Socialist average rates of profit are formulated in a planned way by the state. However, this is not to say that competition does not exist in a socialist economy or that there is no need for such competition.

So long as a commodity economy exists, objectively speaking, competition must exist. Every producer of a product is sometimes a buyer and sometimes a seller appearing on the stage of competition. "Only through the fluctuations of competition, and thereby only through fluctuations in the price of products can the law of value in the production of products be put into effect, and only when the work time required by society determines the price of products can this become a reality."[1] Production of products and exchange of products continues to exist in socialist society. Each enterprise is, in reality, the owner of products. They must both sell these products and purchase other products. They must, consequently, act as buyer or as seller in opposition to other producers of products and engage in competition. This exists objectively and cannot be changed by the will of men. The competition among socialist enterprises is founded on the differences in individual rates of profit and the average rate of profit. The average rate of profit is a unified standard by which the state checks on enterprises; the individual rate of profit is the actual result of economic activity achieved by the enterprise.

Competition among socialist enterprises can be conducted in many ways, as follows:

1. Price. The state should permit market prices a certain amount of fluctuation. Each enterprise, acting as buyer or seller, could haggle about price on the basis of equality. From the seller's standpoint, so long as the selling price of the product was higher than the cost price, he could gain a profit. A wide latitude on the question of price would exist between the buyer and the seller between cost price and market price. In this way enterprises would be pressed to reduce costs of products, raise their quality and improve the productivity of labor.

2. Buying and selling. Activities in buying and selling would have to go through the market with buyers and sellers directly signing contracts. Both sides would have the right to try to get the best buying and selling conditions. If they would want to buy, they could buy, and if they would want to sell, they could sell. There would be no need for interference of administrative procedures.

3. Quality of goods. In the marketplace, the buyer could select products and compare the economic value and the use value of various products. The seller could propose a price on the basis of quality. As a result of the development of science and technology, numerous products may be substituted one for another, and the buyer would have wide room for selection. A single product has many uses, so sellers would also have wide latitude for selling. Furthermore, in matters of credit and service, there could also be competition. Such competition would both be between buyers and sellers and among buyers and among sellers.

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[1] Engels, "Marx and Roberts," "Complete Works of Marx and Engels," Vol 21, p 215

When some people hear "competition," they react against it, thinking that this is a phenomenon characteristic of capitalism. And so it is. Competition is a universal phenomenon of capitalism just as production of products is a universal phenomenon of capitalism. However, competition, like the production of products and the exchange of products, is old. The craftsmen of the Middle Ages, even though restricted by the guild system were incessantly in competition. The guild system was itself a product of competition. Without competition there would have been no need for guilds. In capitalist societies competition has certainly created extreme suffering. Competition treates the internal laws of the production methods of capitalism as a coercive outside force controlling every capitalist. It forces every capitalist to endless accumulation and to expansion of the scope of production to increase his competitive capabilities. It forces every capitalist constantly to improve technology, raise the productivity of labor, lower the individual production prices of goods; it forces every capitalist to plan production on the basis of the needs of the marketplace, spontaneously to adjust the distribution to every sector of the total labor force in the society, and thus it plays a role in promoting the development of productivity in capitalist society.

Competition among socialist enterprises under the guidance of the state plans has positive significance in many ways for the development of productivity.

It would be beneficial in formulating state economic plans. Through competition, the state and every enterprise could come to understand the amount of social need for any given product to formulate accurate production plans, thereby making production more responsive to needs and making the distribution of total labor force in various sectors of society more equitable.

It would be beneficial in promoting updating of technology in enterprises and in raising the productivity of labor, thereby decreasing the per unit of product amount of labor required. Marx said, "Once a person starts producing at a comparatively low cost, using methods that are less than prevailing market prices or the value of products sold in the market, he will be able to sell more products and carve out a large share of the market. He will be able to do this and begin to play this role. Then, gradually, other people will be forced to use cheaper methods of production, and required social labor will be reduced to new and lower standards."[1] This is also applicable to socialist competition. It impels enterprises to strengthen their cost accounting, to conserve embodied labor and human labor, and lower costs of individual products, thereby reducing cost price to society.

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[1] Marx, "Das Kapital," Vol 3, p 217

It would be beneficial in bringing about advances and in spurring on the laggards so that enterprises do a better job of completing state plans. With competition, every enterprise would have to strive to raise its individual rate of profit, and this might make some enterprises who have had deficits heretofore turn a profit, make enterprises whose rate of profit has been comparatively low heretofore fulfill and overfulfill profit quotas, make enterprises that have been advanced heretofore become even more advanced, providing more profit to the state and making a better contribution.

It would be beneficial in implementation of the principle of material welfare. With competition, enterprises whose rate of profit exceeded the average rate of profit could keep a rather large amount of the profit to use for prizes and wages for the work force, with the greater the excess the greater the rewards, and the less the excess the less the rewards. In this way rewards to workers for their labor would be directly tied to the results of the economic activities of enterpries, causing everybody to be concerned with production and be concerned with management.

It would be beneficial in overcoming bureaucracy, in reducing blindness in economic work and the blind direction given by a minority of people. If competition is opposed and mistaken belief is placed in administrative orders with everything shifted to meeting "the desires of higher authority," or if it is supposed that all that is needed is a quota system and a piece of paper with orders from above on it to be able to manage perfectly the numerous and complicated, and rapidly changing economic activities, and be able to fulfill fully and completely plan requirements, this is just a beautiful wish at best. However, this contravenes the requirements of economic laws and plunders the material welfare of enterprises, and throttles initiative and enthusiasm in enterprises. As a result, economic activities can only stagnate and economic development comes to a halt.

Naturally, everything always divides into two. In competition too, some negative phenomena not beneficial to the socialist planned economy and socialist cooperative relationships will crop up. There is nothing frightening in this. So long as we maintain that practice is the sole criterion for testing truth, continually summarize experiences, improve performance, and be adept in applying various economic levers to adjusting social economic activities, we shall certainly be able to get the most out of competition and both avoid and overcome its negative role.

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ENTERPRISE MANAGEMENT, PAST AND FUTURE DISCUSSED

Beijing JINGJI GUANLI [ECONOMIC MANAGEMENT] in Chinese No 10, 25 Oct 79 pp 10-14

[Article by Ye Yinsong [5509 5593 2646]: "A Review of Business Management Over the Past 30 Years and Some Ideas About Future Reforms"]

[Text] This year marks the 30th anniversary of the founding of our great Chinese People's Republic. In the course of these 30 years, the broad masses of staff and workers in business management, acting under the correct leadership of the Chinese Communist Party, have diligently carried out the overall program for "development of the economy and guaranteeing supply," and have continuously expanded and accelerated the flow of commodities through their adherence to a political standpoint, a production standpoint, and a mass standpoint to make great contributions in striving to produce, to serve consumers, and to accumulate capital for the state.

During the early period of national reconstruction, when the socialist economy had only so recently been established, various kinds of special companies were established on the basis of the State Council's "Resolutions on Unified State Fiscal and Economic Work," and its "Resolutions on Methods of Conducting Unified Nationwide State-Operated Trade" for the purpose of meeting the need to rebuild the national economy. It was stipulated that the head office of these companies would be the cost accounting unit, and that capital and materials for state-run trade organizations nationwide would be allocated through the unified management of the Ministry of Trade, which would institute a system whereby income from trade would travel upward and disbursements for trade would travel downward to and from the state treasury, with unified planning, statistics, fiscal accounting, and pricing of goods. Allocations of materials and funds among state-operated trade enterprises would all be done by the method of transferring accounts internally from echelon to echelon, with interest being calculated. At the time, such a highly centralized management system and methods played an active role in stabilizing and developing the socialist economy and in providing flexibility for the struggle against capitalist economic power.

In 1953 the country began to enter a period of large-scale economic construction, and the First Five-Year Plan began to be implemented. In order to meet the needs of the developing situation, in August 1952 all of the state-run trade organizations nationwide were divided into three systems, namely foreign trade, commerce, and grain (with an additional supply and marketing cooperative system). The commerce system launched pilot projects to "set up sites to account for funds" in all-out implementation of a system of cost accounting. Most of the special companies set up first, second, and third echelon wholesale points and retail points in a commercial network. Most enterprises set up revolving capital and fixed assets and stopped the trade treasury system; they set up planning, statistical, financial accounting, and commodity pricing systems and methods that were quite complete. Each business unit that had been approved for funds had authority to do business independently within the limitations of plans approved by the state, to conclude contracts with foreign countries, to open bank accounts, and to arrange for loans and settle accounts. Allocations of commodity goods and movements of funds within enterprises and with units outside the commercial system were entirely transferred and cleared through the banks, with a cessation of the method of internal transfers of accounts. Profits and losses by businesses were directly reconciled through the local fiscal organization and bank. This method of business operation had been essentially borrowed from the Soviet Union. When we lacked experiences of our own, this way of doing things was understandable, but it did not suit actual circumstances in our country in many ways.

In 1958 implementation of the Second Five-Year Plan began. The party issued its "Directive on Launching a Campaign Against Waste and Against Conservatism," that was to fully arouse the masses, eradicate superstition, liberate thought, reform irrational rules and regulations, and usher in a high tide of mass economic reforms. Some fairly great changes took place in the commercial system and the management system. Acting on the State Council's "Regulations Pertaining to Reform of the Management Systems of Commercial Enterprises," the first and second commerce ministries (including the supply and marketing cooperatives) merged, and the special companies were abolished to bring about "a oneness in administration and enterprise" (meaning a merger of commercial administration and management units with enterprises). Municipal business enterprises were, with the exception of first echelon wholesale stations, placed under the management of provinces, municipalities, and autonomous regions. All sorts of rules and regulations were eradicated, with only 38 individual ones being retained and transferred, the remainder serving only as formulations of principles, with specific methods being formulated by the bureaus of commerce in provinces, municipalities and autonomous regions. In August 1958, the Ministry of Commerce convened an All-China Cost Accounting Work Conference for an exchange of experiences among various places in the reform of rules and regulations. In December the full line of credit system was put into effect whereby the circulating capital of enterprises consisted entirely of bank loans. The mass reform movement succeeded this time in breaking the conventional pattern of foreign experiences to take its own path and to begin from existing realities to study and formulate our own methods of economic management. In the field of economic management it truly created a set of clearcut and readily workable methods. But some erroneous tendencies cropped up too, the principal ones being the lack of vigorous leadership in the great mass demolition and rebuilding and the large purchasing and large marketing, transfer of authority in excessive amounts excessively hastily, an unwarranted emphasis on simplicity in many rules and regulations, and a neglect of scientific management. In some places, "accounting without account books" even appeared, to create a certain amount of chaos in management. In June 1959 the State Council approved and forwarded to the Ministry of Commerce and to the head office of the People's Bank a "Report on Strengthening of the Commercial System, Financial Planning, and Credit Planning," which provided for a division of management between the central and local echelons, while at the same time establishing methods for management of funds in trades and industries of different kinds. In July, a system of commodity and funds quota management was put into effect throughout basic level wholesale and retail enterprises. In November came a revision of the unified financial accounting system, which contained regulations on planning, capital, costs, and the forwarding to higher authority of profits and the retention of profits. In consequence of the adoption of these measures, management of enterprises gradually improved. From 1960 to 1964, an across-the-board campaign was launched in the commercial system to take stock of commodities, take stock of funds, and to take stock of accounts, which was called the "three stock taking" campaign. Guided by the slogan of several years previous that said, 'Procure whatever is needed for production and procure as much as is needed for production," many commercial enterprises bought up large amounts of second rate goods at high prices, goods that could find no market, and commodities that could not be used, with some even engaging in the buying of almost anything for purposes of speculation and to practice fraud, which created great losses for the state. This was also an extremely profound historical lesson. After between 4 and 5 years of arduous and painstaking stock taking with appraisals, examinations, and approvals, resources were substantially clarified with the spurious being eliminated and stock on hand established.

In 1962, the national economy instituted a program of readjusting, consolidating, replenishing, and improving. The 10th Plenary Session of the Eighth CCP Central Committee produced the "Resolution on Problems in Commercial Work." The Central Committee and the State Council followed up with the issuance of three decisions on unified management of circulating capital by public finance, banks, and businesses (called for short the "six articles for public finance," the "six articles for banks," and the "eight articles for business enterprises"). In the spirit of the above, state-run business enterprises and supply and marketing cooperatives became separate from each other, the special companies were reviewed, and a mass campaign for improvements in management was launched. In October 1964 the "Regulations Regarding the Management of State Operated Commercial

Enterprises" was promulgated. At the same time there was a spreading of the experience in Tangshan Prefecture, where circulation of commodities had been organized on the basis of an economic region, and this solved the long existing problems of numerous links, high costs, slow turnover, and unreasonable prices that had resulted from the setting up of commercial organizations according to administrative divisions. In the field of fiscal accounting, the total line of credit system was abolished and the former method of funds disbursement was reinstituted. Additionally, after tests were run, the "addition and subtraction method of keeping accounts" was set up and promoted to take the first step in establishing our own rules and regulations.

After 1966 enterprise management was destroyed beyond recognition as a result of the disturbance and destruction, the reckless bludgeoning and false labeling done by Lin Biao and the "gang of four." The special companies were dismantled, "regulations" were cut asunder, personnel were sent to the countryside, systems were abolished, and many places became imprisoned in commercial networks set up along the lines of administrative divisions. Unified socialist markets and integrated channels for commodity flow became fragmented. Planning work became greatly weakened with no unified plan for commodity flow in commerce but only incomplete allocation plans, financial budgets taking the place of financial cost planning, commodities, funds, and property being appropriated and used willy-nilly with records in chaos and no clear records of stocks on hand being kept. Standing treats and offering gifts, extravagance and waste, backdoor deals, arbitrary action, and such improprieties were quite common, causing operational losses. This was a great calamity for the management of commercial enterprises.

In short, management of the commercial sector has experienced "three rises and two falls" during the past 30 years. The first 8 years (3 years of economic recovery through the First Five-Year Plan) was a period of construction that started with nothing and made something. Though it had its shortcomings, both its thrust and its accomplishments were good. In 1958 during the great demolition and great rebuilding with large purchases and large marketing, the level of management made a dramatic decline. In 1959 it began to revive and readjust, until by 1965 a system was again substantially established and on the way to improvement. After 1966 the level of management again dropped, until 1976, when after the "gang of four" was smashed, the Party Central Committee lay stress on the readjustment of enterprises, launched a stock taking in warehouses, an inventory of property, an accounting for funds, and a campaign to reverse losses, increase profits and increase production while practicing economy, gradually building and improving on the necessary rules and regulations to have work in every field begin to walk along the right road. But this readjustment contained a quality of revival with many economic indices not yet having revived to the best levels on record. The concentration of the basic experiences of the past 30 years are: whether matters are to be handled on the basis of subjective desires or on the basis of objective economic laws; whether purely administrative methods are to be used to run enterprises or whether economic methods are to be used to run enterprises; and whether the experiences of our forefathers and of foreign countries are to be mechanically applied, or whether we are to start with realities and by adapting methods to situations and by studying the experiences of our forefathers and of foreign countries formulate our own ways of doing things. It goes without saying that planned proportional development of the economy is required by objective laws, yet we insist on slighting planning, do not take into consideration the proportional development of all aspects of enterprises, and do not give attention to the overall balance. Greater and greater refinement in economic work is an inevitable tendency accompanying the development of production and social progress, and our systems and methods need be repeatedly simplified and resimplified and ultimately abolished. The economy is the foundation, and the economy determines public finances. This was expounded early in both the works of Marx and Lenin and in the works of Comrade Mao Zedong, but some people act in disregard of this teaching and use public finances to determine the economy and to determine the flow of commodities. According to the fundamental economic laws of socialism, the goal of production is the maximum fulfillment of the increasing needs of the people, yet we have set the market according to production without taking account of consumer desires, and have bought whatever has been produced. This is a lesson of history that we should absorb.

The work focus for the entire party has now been transferred to socialist modernized construction. We should diligently summarize both the negative and positive experiences of the past 30 years and actively and carefully carry out rather thoroughgoing reforms in the management of enterprises to meet the needs of the changing situation. Now for a few ideas on the main problems in reform.

I. Problems in the Commercial System

The commercial management system has gone through repeated experiences, some of which have been successful and some of which have been failures. Now it appears that the study and designing of a management system for businesses must begin with the realities of commodity flow. Commerce is the bridge and the bond between producers and consumers and between urban areas and rural villages. The function of commerce is to buy commodities from producers to supply consumers, and this is what we commonly refer to as the organization of commodity flow. For commodities to flow there must be channels for them to flow in. Without such channels or if channels are incomplete or obstructed, the role of commerce cannot be accomplished. So the commercial system should place "forms" first and set up a graded management for various specialized companies on the basis of the management characteristics for different commodities. In addition, different management methods should be based on particular characteristics of different specialized companies.

The second problem in the system of management of commerce is that there has never been any wholesale organization set up on the basis of economic divisions and a rational flow of commodities with an organization of commodity flow and a simplification of overlapping organizations and transfer links with the development of "four ats" (at the plant, at the warehouse, at the center, and at the wharf) with direct transportation into and ou of these points. This has been an historically effective experience and should be fully affirmed and rapidly promoted. Furthermore, during the past 30 years commercial organizations have been divided only to be recombined and combined only to be redivided, with a crisscrossing of management and a misalignment between upper and lower echelons. In the case of coal, petroleum, pharmaceuticals and aquatic products, for instance, management is exercised by commercial concerns in some provinces and municipalities, but in others management is exercised by provincial and municipal fuel, materials, hygiene, and agricultural departments. This poses few problems in commercial administration, perhaps, but it is unwieldy from an administrative and management standpoint, particularly when it comes to accounting for economic quotas, accumulation, itemization, analysis, and making assessment. It also adversely affects competition among enterprises, and assessment and comparison activities, and it presents certain difficulties for leadership organizations in studying and formulating programs and policies to improve administration and management. Such a situation should be avoided at all costs in future.

2. Problems in Management of Planning

Thirty years experience has demonstrated that too much planning and no planning are equally bad. Some of these experiences are worth holding on to as follows:

First, throughout the country there should be a complete planning system with planning in the major areas of circulation of commodities, financial costs, wages for labor, and capital construction in the commercial sector. There should be an overall balance among plans, and there should be leeway but no gaps in plans.

Second, on the basis of the principle that economics determines public funding, plans for financial expenditures in commerce must be prepared and linked with plans pertaining to commodity flow, and not be replaced by financial budgets. Of course commercial financial cost plans must take full account of financial budget requirements, but in case of conflict, commodity flow plans should be followed.

Third, planning targets should be principally relative targets with absolute targets playing a supplementary role. Plans transmitted downward from higher authority should only set the main proportions for economic activity, and enterprises should be free to operate independently, using their own discretion to manage within the limitations of these proportions. In this way not only can procedures be simplified but also increased flexibility will be given enterprises in the way they administer plans.

Fourth, the seriousness of planning must be increased. Planning should embody the programs and policies of the party and serve as a guide to action. The leadership of enterprises bear main responsibility for completion of state plans. Actions that result in no implementation of plans or damage to plans have to be punished through economic means. Personal outlays and cooperation outside the plan should be brought on the track of the plan by all means.

3. Problems in Relations Between Industry and Commerce

Historically there has been a close relationship between the quality of administration and management in commerce and relations between industry and commerce. For many years a virtual "system of fixed marketing quotas on the basis of products available" has existed, which is to say that there was procurement of anything and supply of anything that happened to have been produced. This "system of fixed marketing on the basis of products available" seems to start with production and help production when, in fact, it is disadvantageous to production. From the standpoint of commercial departments, procurement without concern for what can be marketed must inevitably result in gross overstocking, and ultimately the merchandise must either be reduced in price or written off as a loss. This stupidity of producing, procuring, overstocking, price cutting and writing off has produced alarming losses for the state. In future relations between industry and commerce, except for those major items intimately related to the state plan and the livelihood of the people and those for which supply falls short of demand in the marketplace and are bought on the basis of proper quality and quantity, all other commodities should be selectively purchased on the principle of "ordering production on the basis of the market." Among industries and businesses, transportation and businesses, and businesses and businesses, there should be greater use of the contract system with clearcut definition of economic responsibilities, and with violators of contracts being required to indemnify losses and pay fines. Subsidy payments to state-run enterprises that do not help improve management and administration of either industry or commerce should be forthrightly abolished. Adjustments should also be made in the relationship between agriculture and commerce, both so as to give vigorous support to agriculture and to prevent the passive method of giving only money and material. The various methods of commerce for making deposits for advance purchases of, and funds to assist production of agricultural sideline products have shown little practical results after many years, and might better be left to the unified management of banks. All levels of commercial enterprises involved in procurement of industrial and agricultural goods should strengthen their system of checking merchandise prior to accepting it, to prevent questionable industrial goods and shoddy but high priced agricultural sideline products from entering circulation.

4. Problems in Financial Management

Business finance is both an important integral part of the flow of commodities and an important integral part of state finance. So-called

Financial management is the use of the financial levers of price, currency, capital, costs, and profit to organize the flow of commodities, to institute economic accounting, and to manage, employ, distribute and accumulate capital. In ordinary words, it is management of money, use of money, and earning of money. It is wrong not to spend money when it should be spent or not earn money when it should be earned; it is equally erroneous to spend money when it should not be spent or to earn money when it should not be earned. Historically, problems have cropped up with both. At the present time, the main problems existing in financial management are that the limits of financial management authority are regulated to death, an excessive amount of circulating capital is being used, turnover is slow, fixed assets and equipment are lacking, sources of capital are insufficient, the cost level for commodity circulation is high, losses and damage is great, deficits are severe, and enthusiasm for management in enterprises is not high. If these problems are to be solved, the following measures should be adopted:

First, an inventory of goods and an accounting for funds. Adoption of a system for calculating interest or collecting taxes for the use of circulating capital or fixed assets by enterprises. For normal day-to-day use (such as authorized set amounts of funds or assets), establish low interest, but there should be strict control over funds used in excess of plan with high interest being charged. At the same time, the rate of profit on capital should be used as a criterion for the evaluation of management effectiveness in enterprises in order to encourage economy in the use of capital by enterprises and to accelerate turnover.

Second, change the policy of uniform receipts and uniform disbursements to a linking of receipts and disbursements with greater receipts, permitting greater use of them and lesser receipts requiring lesser use. According to the laws of history, the setting of proportions of funds in enterprises, the proportion of accumulation passed upward, the proportion of investment in capital construction, and the proportion of expenses and expenditures amounts to mastery over financial income and disbursements. If administration and management in an enterprise are good, amount of sales great, and profits high, commensurate increases may be allowed in use of funds, investment in capital construction, and in expenses and expenditures, while the accumulations passed upward to the state will be similarly increased. Contrariwise, everything except the accumulations passed upward to the state have to be commensurately reduced. Enterprises set up production capital, consumption capital, economization capital, and accumulated capital. Production capital is used chiefly in the expansion of enterprises and in further production, including the supplementing of circulating capital and investment in capital construction. Consumption capital is used in defraying costs in the circulation of commodities and for other disbursements. Economization capital is capital that may be expended or not by the enterprise in authorized proportions. In the management of enterprises, it is used chiefly for rewards to staff and workers, for welfare, or for variations of these.

Accumulated capital amounts to profits and taxes that are regularly sent upward to the state treasury.

Third, distinguish the subjective and objective factors to make a correct appraisal of the management effectiveness of enterprises. Formulate clear-cut policies limiting financial losses, and get rid of all subjective factors in administration to help appraisal and comparison. At the same time, stipulate that in addition to financial losses, enterprises will also be held totally responsible for the results of their management. When financial losses attributable to management occur that cannot be given timely reversal, the enterprise must be halted for reorganization or reconstitution of its leadership group.

5. Problems in Bookkeeping and Accounting

In the course of administration and management during the past 30 years, business accounting has remained fairly stable, with no great changes nor the appearance of large problems. But basic accounting work is very poor, and in many places account books are chaotic; there is little notion of property or stocks; and no accurate reflection of economic activity is possible. Important policy questions that the state and upper echelon departments need to understand or study frequently cannot be completely found in a timely fashion in the accounting data. When accounting reports are not completed on time, and quarterly reports for the entire country are compiled 1 or 2 months after the quarter is over, they become "belated efforts" good only as historical data. Analytical work done on financial accountings is also very poor and does not bring to light problems in a timely way nor put forward proposals for improvements, nor play an effective role in providing staff assistance to the leadership.

Reform of accounting is required in two main ways: one is the use of modern science and technology to arm fiscal accounting work to change the traditional hand operations, and to improve work efficiency and quality. One example is the use of electronic computers to record accounts, figure accounts, and to store accounting data, and use of movie films and facsimile reproduction to improve the timeliness and the accuracy of accounting reports. The other reform is to the structure and criteria used in accounting and bookkeeping. Along with the gradual application of science and technology to accounting, the former vouchers, account books, report forms, and such traditional methods should be studied and reformed. Additionally, there should be increased checking and auditing of accounts. From this foundation there can be a gradual formulation of "accounting laws" that become an important integral part of economic legislation to guarantee the sound development of accounting work.

6. The Problem of Enterprise Autonomy

Socialist business enterprises are, like industrial enterprises, the basic economic units of the socialist economy, and they ought to possess independent economic benefits. Most recently the State Council sent out several documents on the management system in state-operated industrial enterprises, among which one was for a broadening of autonomy in the management of enterprises. Business enterprises also have problems in the broadening of autonomy in enterprises.

Administration and management must arouse and depend on the masses and fully bring into play the enthusiasm of cadres and of staff and workers. The present administration and management and the cadre system is not conducive to bringing into play this kind of enthusiasm; autonomy in basic level enterprises is slight. Henceforth basic level enterprises should be accorded increased initiative authority in the purchase and marketing of commodities and in administration and management. In the area of democratic management, the "three participations and one change" of many areas in the past was a good method. The problem is that when increased emphasis is given to administration and management, frequently this method devolves into formalism with no real function being served. Henceforth, in organization and in systems, necessary measures must be adopted to increase assurance. Additionally, financial authority in enterprises should be expanded. It should be stipulated that enterprises have fuller initiative in the purchase and marketing of commodities, in capital construction, in large and small repairs, in improvement of technology, and in award and welfare matters.

The institution of material incentives, within the framework of placing politics in command, is not only an important issue in implementing the principle of distribution according to labor performed, but is also a major issue in the strengthening of management and economic accounting. The economic accomplishments of enterprises must be related to the economic benefits to the staff and workers in enterprises if the broad masses are to be made to care about the results of management in enterprises and initiative and enthusiasm for management is to be aroused. On the one hand there has to be a reform of the financial system in order to encourage the advanced and supervise and urge on the laggards. On the other hand there must be a reform in the wage system with the institution of a basic wage supplemented by a system of allowances and rewards. Basic wages would be fixed wages for one's grade. Allowances would be variable wages with the amounts depending on the accomplishments of the enterprise's management. For those personnel who exhibited outstanding accomplishments in the performance of various tasks, various forms of individual rewards could be offered.

In short, expansion of the autonomy of enterprises is an important problem in the reform of commercial enterprises that should attract further serious attention.

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LAW OF VALUE, MANAGEMENT OF TOOLS DISCUSSED

Beijing JINGJI GUANLI [ECONOMIC MANAGEMENT] in Chinese No 10, 25 Oct 79 p 50

[Article by Li Chengrong [2621 2052 2837] and Lin Shuxin [5677 2885 2450]: "Use of the Law of Value To Do a Good Job in Tool Management"]

[Text] Average expenditures for tools in the welding shop of the Dalian Locomotive and Rolling Stock Plant during 1977 amounted to 2,402 yuan. In 1978 the amount was 1,466.80 yuan, and between January and May of this year, a further decline to 1,167.10 yuan occurred. In less than 2 years a decline of one-half in expenditures for tools took place. The principal reason for such a rapid decline in tool consumption in this workshop was promotion of a "money coupon" system, which applied the law of value to tool management. The workers say that the law of value is a treasure from which capital construction cannot be separated. If only one is willing to learn it and apply it, large results will be seen very quickly.

The tool room at this workshop began a monthly tool consumption quota for teams and groups in June 1977 with a "money coupon" system being used to draw tools. The quotas were determined from the actual consumption of tools by each team and group over the years plus changes that had taken place in production tasks. "Money coupons were in eight denominations of 10 yuan, 5 yuan, 2 yuan, 1 yuan, 50 fen, 20 fen, 10 fen, and 5 fen, and these were issued at the beginning of each month to teams and groups. The past practice of getting tools was now changed to use of the "money coupons" to "buy" tools. The tool room set up an accounting system to keep track of consumption and, on the basis of how many coupons had been surrendered, it recorded the kinds of amounts of tools expended by each team and group, and a totaling was made at the end of the month with both a statement of conservation and excess expenditures for each team and group being publicized.

As a result of the institution of consumption quotas for tools and the adoption of "money coupons" for drawing tools, the old situation in tool use whereby "once the lid was taken off the kettle everybody could eat all he wanted and go back for more," with an exchange of good tools for broken ones, and drawing new tools in cases of loss was changed. Now, each month the workers consider carefully how the "money coupons" will be used in "buying" what tools and in "buying" how many for how much money. In the past, whenever a tool broke, some workers would want to turn it in for a new one. Now when a tool breaks, thought must first be given to whether it can be repaired. In April of this year, the boiler room's consumption quota was 20 yuan, but it had already spent 19.85 yuan of this amount by the 29th of the month. It so happened, however, that the team and group needed a sheet of sandpaper worth 30 fen, so in order not to overspend, the workers turned in to the tool room two saw blades worth 30 fen that had been stored by the team and group, making the monthly consumption of tools not only not exceed expenditures but managing to save 15 fen as well. This is the way of the workers who strive to use the minimum consumption of tools in completion of production plans for the month. During the months of April and May of this year alone, for every 100 yuan of tool consumption, they created 956 yuan more output value than for the same period last year.

In order to muster more zeal for conservation of tools among employees, comrades in the tool room have devised ways to use the law of value more broadly and more flexibly as follows:

(1) Exchanges of old things for new. They not only stipulated use of "money coupons" to draw tools, but also stipulated an exchange of old things for new ones. In this way, not only were old and useless tools turned in by the teams and groups, but some useful tools were selected from among them, redeemed for value, and re-issued to other teams and groups to get the most out of materials on hand. For example, once a team and group had used a 150 mm grinding wheel till it was 40 or 50 mm in diameter and no longer useable, it became a piece of junk for that particular team and group. But the tool room could redeem this ground down grinding wheel and re-issue it to a team and group that used 60 mm grinding wheels. In this way a grinding wheel could save the state 95 fen.

(2) Repair of junked tools for re-issue at a reduced price. This workshop uses up large numbers of welding nozzles each month. These things are made of non-ferrous metal and have a value of 5 yuan a piece. When people used to find that a nozzle was no longer useful, they junked it. Now the comrades in the tool room recover the welding nozzles that have been scrapped and, after fixing them or replacing parts, they "sell" them to teams and groups for 2 yuan a piece. In last year alone, more than 500 of them were repaired for a saving to the state in excess of 1500 yuan. They also encourage the teams and groups to repair the welding nozzles themselves. Between January and April of this year, consumption of welding nozzles declined by about 50 percent over the same period last year.

(3) Careful calculation and strict budgeting of the needs of the teams and groups. The comrades in the tool room carefully calculate and strictly budget, on the basis of actual practice, the kinds of tools and the number

of tools that are needed for production by teams and groups, striving to help the teams and groups save another fen of money. Each sheet of sandpaper costs 30 fen, but no matter how little a worker might need in the past, he always drew a whole sheet. Now the tool room cuts each sheet into 4 pieces and the workers draw only their needs. Last year alone 57 sheets were saved.

In the application of the law of value to the management of tools, the comrades in the tool room of this workshop also paid attention to the following two points:

1. Doing a good job of propaganda and agitation. Whenever they found an example or an experience in the conservation of tools, they propagandized it at once. So that the gear cover group might save the state 1 fen of money more, the party group head took the lead in refurbishing old welding nozzles. Through his initiative the whole group has effected a saving of 15 sets of welding nozzles between January and May of this year alone. When the tool room discovered this example, it immediately proposed that the party branch of the workshop make the matter public at an enlarged meeting of the workshop to give impetus to the launching of a campaign throughout the workshop to repair the old and make use of the worn out.

2. Combining the application of the law of value with the launching of a campaign of appraisal through comparison in work competition. They proposed that tool consumption by teams and groups in the workshop be made the first of six items in the appraisal through comparison work competition with consumption of tools by individual workers becoming the primary condition for the selection of advanced individuals. In the process of applying the law of value to lower consumption of tools, this brought about an organic unity of the interests of the state, the collective, and the individual to provide a broad mass base for both a steady decline in tool consumption and the strengthening of tool management work.

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MANAGEMENT EXPERIENCE OF LOCOMOTIVE CREW RECOUNTED

Beijing JINGJI GUANLI [ECONOMIC MANAGEMENT] in Chinese No 10, 25 Oct 79 pp 51-53

[Article by Wan Taihe [8001 1132 0735] and Zhang Shuren [1728 2885 0088]: "The Locomotive's 'Locomotive'--Basic Experiences in Management of the Crew of the Locomotive, 'Mao Zedong'"]

[Text] During the 33 years of its existence, the locomotive crew of the "Mao Zedong" on the Fengtai Section of the Beijing Railroad Bureau has steadfastly obeyed the party, raised high the banner of Mao Zedong Thought, devoted itself to revolution, stressed full production, supported a system of responsibility, arduously practiced basic skills, done a good job of uniting for mutual assistance, has unswervingly striven to be best, and has not only completed production tasks with distinction but has also forged group after group of good cadres who are both red and expert, has amassed abundant experiences, and has been honored with the name "locomotive's locomotive."

This locomotive crew has experiences in management that center on safety in transportation but also include insistence on uncovering unused potential, conservation, improvement in the productivity of labor, and enhanced building of teams and groups. The following introduces several aspects of their activities.

Sense of Responsibility About the Training of Masters

When old locomotive engineer Guo Shude [6753 2885 1795] speaks of the management experiences of the crew of the "Mao Zedong," he says: "The basic issue is a sense of responsibility."

In the 33 years that have passed since the day the "Mao Zedong" was first given its name, one generation of crews after another has come and gone, and great changes have taken place in other ways as well. But their tradition of adherence to Marxism-Leninism and Mao Zedong Thought has endured without change, and they have ever given attention to the full play of the role of the party group as a battle fortress, frequently combining the situation, the tasks to be done, and the thoughts of individuals to do a conscientious job of teaching all three aspects as follows:

(1) Support of class education; causing everybody to support proletarian qualities always, and overcoming non-proletarian ideology. Most important for these purposes has been taking aim at real ideological problems existing within the group, organizing old workers to explain matters by using their own experiences as examples, and recalling the past and contrasting it with the present. Long-time locomotive engineers, Comrades Chen Jiesan [7115 2212 0005], Li Yong [2621 3057], Guo Shude, Cai Lianxing [5591 6647 5281], and Guo Yingfu [6753 2503 4395] are all old workers who suffered oppression and exploitation in the old society. They often use their own bitter experiences in the old society, where they were treated like things and like beasts of burden, and where they "slept on a rush mat with a brick for a pillow, with only steamed bread made of moldy flour mixed with dirt for food," to teach everybody not to forget class suffering, and to work heart and mind for the revolution. They regularly examine their own revolutionary contributions and constantly raise their own class consciousness.

(2) Support of education in the revolutionary tradition. For 33 years these train crewmen have used their collective labors to compose a glorious history of the locomotive "Mao Zedong." By way of transmitting the crew's glorious tradition from one generation to another, they have adhered to the following action: On the first day that a new worker boards the locomotive, he is given indoctrination in the full history of the train crew. On important holidays, on the name day of the locomotive, or whenever an important task is taken up, speeches are given about the glorious history and fine tradition of the "Mao Zedong," so that all the workers who form the crew will experience a strong sense of collective honor.

(3) Maintenance of education in the great revolutionary goals. During the past 33 years, the crew of the "Mao Zedong" has gone through all sorts of tests including tests that have been difficult and have brought setbacks, and tests that have gone smoothly, bringing credit. They have been awarded prize after prize and are famed throughout the land. Some of them have been selected as delegates to the Party Congress and delegates to the National People's Congress. When their party group instructs others, it routinely credits the party and the collective with its honors and accomplishments. It requires that no one should ever be arrogant because of honors. They have also made a regulation whereby no one may glorify himself either to close friends or publicly as a member of the crew of the "Mao Zedong"; and he may not use his reputation as a member of the crew in his dealings; nor may he set himself apart. If the party group discerns the least bit of self-satisfaction, it will initiate education; for those who have made achievements, new tasks will be introduced; and those who have been praised will be examined for faults as measures designed to effect improvements. Everybody is to reflect, "The greater the

difficulties, the greater the encouragement; the easier the going, the greater the care; the busier the more thoroughgoing; the greater the achievements, the more humility." This train crew has also established a system for learning from other units, taking the opportunity afforded through participation in meetings for the exchange of experiences to learn humbly, taking the initiative in studying the experiences that others have introduced, linking up with several advanced train crews both collectively and as individuals throughout the country, and studying wherever the train crew happens to travel and wherever the train crew happens to be.

Maintenance of a Strict System of Responsibility

From the very day that the locomotive was named "Mao Zedong," its crew has carried out a system of strict responsibility. They say: "To be strict is to love; to be lax is to hurt. Laxity and no discipline will bring about disaster; comfort and ease will cause a downfall." The entire train crew conscientiously and at all times, in all places, and in every way, requires strict implementation of all sorts of rules and regulations that have a system of responsibility at their core. They continuously absorb the operating methods of advanced locomotive engineers, and they have combined the operating experiences of this train to create a complete operating technique: (The "Mao Zedong Train Crew and Attendants Work Methods"). This includes the following:

(1) System of responsibility for safety. The train crew regards safety as the "foundation of transportation." They believe that "to run a train without safety is to have nothing." "Safety is the greatest saving; accidents are the greatest waste." Under all circumstances, the safety of persons and of equipment must be assured. From the time that personnel report for work until they leave work, and from the time that the trains come out of the barns until they return to them, there are strict rules and regulations and specific measures applicable to both. For example, when a locomotive is in motion, they strictly enforce rules such as "First, keep your eyes peeled; second, confirm; third, control; and fourth, call out," and "No boarding or disembarking while the train is in motion, and no starting the train till people are fully aboard; when communications are bad, take it easy." They "accelerate the train rapidly, keep a steady speed when entering stations, apply the brakes hard outside stations, and bring the train to a stop at the right spot."

(2) System of responsibility for division of labor in maintenance. A whole series of careful and sequential operations and maintenance procedures are required for technical inspection, wheel inspections, and regular maintenance of the train. Every individual part of the train has someone responsible for its care. When the train is stopped, it is to be inspected; if repairs are needed, make them; if there is time, polish. All these things are done by the crew.

(3) Regulations on relief of shifts. The train crew adheres to a system of changing shifts rather than changing jobs. Air, water, oil, and steam must all be present, and unless standards are met, there is no turnover of the shift. Once when a big rainstorm occurred, a pit used for inspection of the locomotive became filled with water. The engineer about to go off duty unhesitatingly jumped into knee-deep water and carefully inspected every part underneath the locomotive, and only after he had confirmed that all was well did he hand over the shift and leave work.

(4) Team and group accounting system. They maintain a policy of accounting for each trip with a reconciliation of accounts every 10 days, and an overall accounting once each month, so that they know where they stand every day. They cherish coal as though it were gold, and they treasure oil as though it were blood, carefully calculating and strictly budgeting their use everywhere. Should a piece of coal fall to the ground, they will pick it up; once their coal is put aboard, they sprinkle it with water lest the coal dust be blown away by the wind; when they burn it, they add it carefully and use it sparingly, making sure it has burned completely. When oil is supplied, they make sure no empty space remains in the tank, and that none overflows; until they are resupplied, they make fullest use of what they have. With materials as with tools, they save wherever they can save, and they never draw anything new if the old can be repaired. When brake shoes are replaced, they gather up the old ones. When shovels wear down, they add a piece and continue to use them. When oil cans break, they solder them back together and use them. After internal combustion engines replaced the former ones, a little oil came out of some small plugs. This they collected right away and rubbed it on moving parts so as to save oil through all manner of means. On diesel engines they installed an oil return feed to make some of the clean fuel oil entering the dirty oil chamber return to the fuel oil chamber, thereby saving more than 10 kilograms of oil per trip. In 1977, the amount of oil used per 10,000 ton kilometers was 20.2 kilograms, which declined to 19.4 kilograms in 1978. Specifications require that crankcase oil be changed each time the gears are checked, and each change takes 1,200 kilograms of lubricating oil. They learned from the experiences of fraternal units and then took the initiative in proposing to the leadership and to chemical checking departments that a change be made from changing the oil each time gears were checked to changing oil on the basis of results of chemical checks, thereby saving a large amount of lubricating oil. This locomotive crew used steam locomotives for 30 years, safely traveling more than 3 million kilometers, hauling goods in excess of 1.2 million tons, saving more than 11,400 tons of coal, and expending more than 20,000 yuan for materials. After converting to internal combustion engines, they traveled safely more than 550,000 kilometers, saved more than 80 tons of fuel oil, and consumed more than 2,000 yuan of materials.

Training in great basic proficiency. Everybody in the crew of the "Mao Zedong" possesses many skills and great proficiency. Operating techniques and repair techniques of each of the engineers who have served for a long time and of the old engineers are very proficient. When cars are coupled, the couplings sound but the cars are not jostled; the train moves out quickly; traveling speeds are high; good use is made of inertia; the speed is kept stable on entering stations; and rolling stock stops at the right spot. A properly adjusted throttle means the train will be punctual; proper amounts of oil mean that moving parts will be lubricated. During crucial times when the trains are heavier than usual, planning must be done according to the dispatcher to carry out the requirements of those in control. Despite high winds and thick fog, trains will rarely be late even though loads exceed axle weights. They stress proficiency in the various skills cited below:

(1) Leadership taking the lead with diligent study and arduous practice. When the switch was made to internal combustion engines in 1977, everything had to be learned from the beginning. Gao Chunting [7559 0193 1656], the party group chief, had driven internal combustion locomotives on the Tanzan Railroad for 5 years. But the "Dongfanghong Type" locomotive that he had driven abroad was hydraulically operated while the "Dongfang Type" was electrically operated, so he had to learn from the beginning too. He made himself an example in diligent study and arduous practice. Late at night he would turn off the lights so as not to disturb the rest of others, and lie on his bed memorizing circuit diagrams. Old engineer Wang Zuotian [3769 0155 3944] would return home after class and stretch out at the table to write electric symbols. His cultural level was low so he was shy about studying with his teacher or him comrades; instead he would study with his daughter at home. Chief engineer Chen Fuhan [7115 4395 3352] had to go away on business during the time when classes in theory were being held, so when he returned he snatched whatever time he could get to learn from his comrades in the unit, and he took the initiative at times when the train was running and he was the assistant engineer to learn from the engineer. Very quickly he mastered the skills and caught up. Spurred by the leaders, the entire unit worked together, and finished within 2 months course work of 6 months equivalency.

(2) Humbly seek learning and constantly improve. Assistant engineer Wang Shuguang [3769 2885 1684] was insufficiently versed in oiling procedures for the internal combustion engines. He and several other assistant engineers sought out a female assistant engineer named Yu Heli [0060 0735 7787], who was a famous oiler known along the whole section, to teach a class. He learned with humility and practiced diligently, soon attaining requirements for knowing and being able to do, and then he went on to acquire more experiences through practice, figuring out some new points for spotting glitches in electrical equipment. When the locomotive crew was checking out the locomotive preparatory to operating it, they used a system of mutual checking, practiced checking over the locomotive, and disassembling parts to improve their analytical inspection and locomotive repair skills. In the dormitory, everybody frequently recited the names of the oiling points and the method of oiling and, following the actual sequences used in doing the work, they diligently practiced "methods of using hands, eyes, body, and feet."

(3) Mutual teaching and mutual learning, using the old to learn the new. Old master workers would often place their hands on the hands of the new engineers to guide their work. Sometimes they would also purposely let new hands unfamiliar with the work run into difficulties, and then let them think things through and make corrections without further instruction. These methods of "frustration and accomplishment" helped the new hands learn fast, gave them a deep impression, made them remember well, and brought good results.

(4) Courageously experiment and bravely innovate. Former chief engineer Cai Lianxing and engineer Hu Chundong [5170 2504 2639] became worker engineers because of their contributions in this regard. In 1960 when the locomotive crews were put under the jurisdiction of an appropriate unit, numerous technical improvements were made in the former steam locomotives. Ordinarily, train crews dare to experiment with new techniques and produce technical innovations. On the locomotive, "Mao Zedong," the sensor for the oil pressure gauge kept giving trouble because of a design flaw, and the instruments inside the locomotive cabin did not function, so it was impossible to control oil pressures accurately. In order to find out the oil pressures, it was necessary to check an instrument inside the machinery. Chief engineer Chen Fuhan had heard that the Beijing internal combustion locomotive section had refitted this device and solved the problem, so he asked questions exhaustively and learned how to do the refitting. Then, working together with inspection and repair workmen in the unit, the device was improved and the problem of the broken sensor solved.

(5) Checking and studying, and mastering the laws of motion. The train crews strongly stress that "driving a locomotive means moving your brains," and regularly carry out on the ground inspection of complicated situations related to motion to figure out the laws of motion. They regard the accidents that others have had as their own accidents, analyze the reasons for them, absorb lessons from them, relate them to circumstances in their own crew, and come up with measures to handle them. After many years of checking and studying, they have gradually mastered rules for preventing accidents and have come up with the "four thorough grasps": thoroughly grasp the pattern of the train's motion, the circumstances along the line, the operating characteristics of each engineer on the line, and the technical condition of the locomotive. In order to master the laws pertaining to a moving train, each time they make a run over a unfamiliar road, they first learn from an experienced comrade, and they also use their off-shift time to walk along the route coming and going or to take a train along it so as to be able to examine carefully the route, the stations, the bridges, curves, and signals along the way and to draw a sketch map of the motions involved. They also try to figure out what demands this motion will place on them, and figure out what effects changes in the weather will have on the movement of the train, carrying out the practice of knowing oneself and knowing what one faces, knowing what lies ahead and what lies behind, knowing the sky and the land, and laying stress on cutting down on proceeding blindly by being in control.

Looking back and looking ahead to the future, the crew of the "Mao Zedong" is out in front and will make even greater contributions in its resolve to conduct a new long march in the four modernizations.

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NUMERICALLY CONTROLLED MILLING MACHINE FOR MANUFACTURE OF LARGE SCREW PROPELLERS

Beijing BEIJING RIBAO in Chinese 25 Jan 80 p 1

[Article by Zhang Xi [1728 6932]: "Building a Numerically Controlled Milling Machine for Manufacture of Large Screw Propellers"]

[Text] Our nation's first five-coordinate synchronized numerically controlled milling machine for manufacturing large screw propellers, manufactured at the First Machine Tool Plant in Beijing with the energetic support of sister organizations, has been in use at the Dalian Shipyard for 3 years. Recently it reached the point where it fulfilled requirements for which it had been designed, as determined by the departments concerned. Experts and technical personnel participating in this determination of pertinent factors think that the design of the structure and of the arrangement of this milling machine is a successful one. Among these, the design of the bar-shaped disengagable guide track and of the automatic screw-pitch measuring and rotating dividing head, is of a unique type. The quality of manufacture is very high, and in certain of its functions it has achieved the same advanced levels as similar milling machines abroad.

This large numerically controlled milling machine is capable of manufacturing large screw propellers for 10,000-ton class oceangoing cargo vessels. It has filled a gap which existed in our country in the realm of research and production of multi-coordinate numerically controlled milling machines. After viewing this milling machine, several people from the foreign shipbuilding industry praised it.

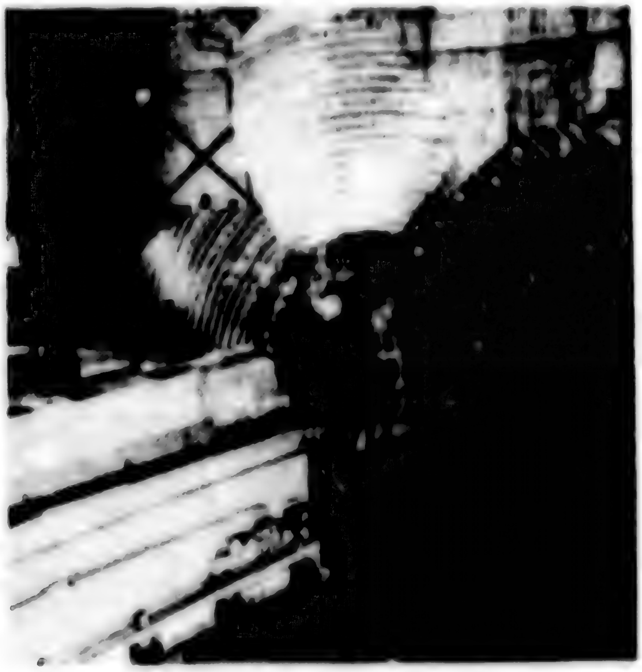
The screw propeller is important in the propulsion of a ship. In recent years, oceangoing vessel departments have requested that screw propellers have high propulsive ratios, in order to increase the speed of steamships while underway, and to prolong the useable life of the screw propellers. However, during the past few years our country, in manufacturing large and medium-size screw propellers, has consistently used pneumatic relieving cutters, milling cutters, grinding wheels, and other backward manual manufacturing methods. The labor intensity has been high, as has the noise level and density of dust during the manufacturing process, but the precision of the manufactured products has been low.

In order to change these circumstances, the First Ministry of Machine Industry jointly organized research and production teams for specialized machinery for manufacturing screw propellers from the following organizations: Beijing First Machine Tool Plant, Shanghai Shipbuilding Industrial Technology Institute, certain design institutes, Beijing Chaoyang District Automated Instruments Plant and the Dalian, Shanghai, Jiangnan and Zhonghua Shipyards. In addition, the Beijing First Machine Tool Plant took responsibility for adjusting and testing work for the manufacture and installation of the machinery.

Design of this large five-coordinate numerically controlled milling machine was begun in 1970 and it was completed and put into production in 1976. In the course of design and manufacture, the Beijing First Machine Tool Plant and other participating research and production organizations continued to detach engineering and technical personnel who had design experience. The Dalian Shipyard even dispatched workers who had abundant experience in manufacturing screw propellers to join in the research and production work. These comrades put all their efforts into studying materials on foreign numerically controlled machine tools, and visited the workshops of several major shipyards throughout the country, carrying out on-site inspections and studies. After half a year's time, they had formulated the design plan for the production of this numerically controlled machine tool.

In 1977 this large numerically controlled milling machine underwent technological testing and reached the point where it fulfilled the requirements of the design plan. However, in 1978 the Dalian Shipyard implemented the people's economic readjustment program, and, intending to manufacture an even more sophisticated screw propeller, requested that design and manufacturing departments carry out appropriate improvements on the milling machine, expanding the scope of the construction. Technicians, experienced workers and others participating in the research and production work, not shrinking from the task, exerted effort in Shanghai, Beijing and Dalian at factories, aboard ships and in laboratories, tackling the key problems day and night. In the major technical problem areas concerning the milling machine, that is in its machinery and electrical equipment, its hydraulic drive, and its sequential design, among others, they carried out more than 30 improvements. In using this large milling machine to manufacture such a specialized and complicated product as a screw propeller, they broke into the theretofore "restricted area" where manufacture of duplicated blades had been impossible. They effected an expansion of manufactured area from the previous 75 percent to 87 percent, with quality which was superior.

At present, the Beijing First Machine Tool Plant's concerned departments are in the midst of setting down the ideas and suggestions brought up about the relevant factors of (design requirements), consolidating experiences, and identifying problems, in preparing to present this new standardized product.



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SECOND INTERNATIONAL AD FIRM LANDS PRC CONTRACT

Hong Kong SOUTH CHINA MORNING POST in English 2 Mar 80 pp 1, 7

/Report by Tim Anderson/

/Text/

A second major international advertising agency has announced the signing of working agreements with China.

Ogilvy and Mather International announced yesterday that recently signed agreements have made the firm the "primary agency" for the Peking Advertising Agency and the Guangdong Advertising Agency in Australia, New Zealand and the European Economic Community.

McCann Erikson International announced similar agreements a month ago for advertising in the United States.

But neither of the big ad firms have yet signed agreements with China's biggest commercial promotions body, the Shanghai Advertising Corporation.

And Executive Director International of Ogilvy and Mather, Mr Michael Ball, says he doesn't anticipate that either of them will sign with Shanghai any time soon.

"I don't think that is likely," he said yesterday, citing the size of the Shanghai Corporation and its many established contacts.

"But if it does happen, we will certainly be in on the deal," he added.

The China advertising account, though still in its infancy, has become great competition for international firms, with each vying for a ground floor edge — if only on paper.

Though China has signed "primary agency" agreements with some firms and freely hired others for individual assignments, volume advertising remains more an area of big potential rather than big profits.

"Actual current volume both inside China and outside is very small," said Mr Ball.

In fact, he said, the sum total of foreign advertising directly financed by China outside Hongkong so far has amounted to one campaign to sell Temple of Heaven Essential Balm in Africa.

"It's not much but it is a toe in the water," he said.

And, he hastened to add, it was organised by Ogilvy and Mather.

"We were the first international agency to place advertising for Chinese products outside China or Hongkong," he said.

"And we are still the only agency to have done so."

The African campaign, while very small by international standards, caused plenty of excitement among the Chinese, he said.

Embassy staff all over the continent were ordered to tune in to the radio advertising spots for Essential Balm, a product similar to the well known Tiger Balm.

"When the the embassy in Togo couldn't get proper reception on their set, we almost had an international incident on our hands."

Future campaigns abroad are expected to focus on tourism, air travel, health foods and drinks, and furs.

But multi-million dollar advertising campaigns in major media outlets are still a distant prospect for China's products, said Mr Ball.

Some of China's hesitancy to jump into advertising in a big way grows from practical problems, he said.

In tourism, for example, a major campaign that brought thousands more tourists to the country would quickly fill every first class hotel room, leaving no accommodation for essential foreign trade representatives.

Another sticky point is Chinese reluctance to squeeze millions of dollars in scarce foreign currency into ephemeral advertising projects abroad.

They are dubious, said Mr Ball, about the possibility of turning real profits with large scale foreign advertising projects.

But he is confident that as they see the results of small advertising investments and produce more goods that are internationally marketable, their minds will change.

"Chinese people have used — and been exposed to — more propaganda than almost anyone else," he said.

"Politically this has been very successful, and they know its power."

Within China, he said, the hesitance of advertising corporations quickly vanishes.

If foreign companies are ready to spend hard cash to see their name on Chinese hoardings, the Chinese are ready to have them.

"The change in just two years is amazing," said Mr Ball.

"Political slogans, if the price is right, can be quickly painted out and replaced by Ford or Mercedes Benz or whatever."

Domestic products,too, are being vigorously promoted through newspapers, radio, television and hoardings, he said.

"Evidence of a consumer-oriented society is available at every hand."

Chinese advertising corporations are eager to encourage that consumer interest, he said.

As part of its agreement with China, Ogilvy and Mather will train Chinese advertising men in the selling techniques that have been honed for decades in the West.

But for all the excitement surrounding China's recent flirtations with the international advertising giants, the payoff is still beyond the horizon, said Mr Ball.

"Realistically, it will be years before all of China is as big a market as Hongkong today in advertising terms.

"And years more until it could match the scale of a European nation.

"It's not profitable now, but like everybody else we are looking at potential."

FOREIGN TRADE

NORWAY GRANTS LONG-TERM CREDITS FOR PURCHASE OF CAPITAL GOODS

Oslo AFTENPOSTEN in Norwegian 28 Jan 80 pp 1, 25

[Article: "Credit Agreement Between Norway and China"]

[Text] On Tuesday a credit agreement between A/S Eksportfinans and the Bank of China with a framework of $100 million will be signed. The purpose of the agreement is to finance Norwegian-produced capital goods and services. It should also be possible to finance new construction of ships under the agreement, reports AFTENPOSTEN's correspondent Grete de Lange from Peking. The agreement will be signed in connection with the visit by a Norwegian shipping delegation to China.

Eksportfinans Signs Credit Agreement With China

(Grete de Lange) A Norwegian shipping delegation led by Under Secretary Per Martin Olberg arrived in Peking on Sunday evening. During the delegation's stay in China a credit agreement between A/S Eksportfinans and Bank of China will be signed. The purpose of the agreement is to finance all forms of Norwegian-produced capital goods and services included in a finance arrangement.

It should also be possible to finance new Norwegian-built ships under the agreement. The credit framework is for $100 million. Two representatives of Eksportfinans have been in China a week ago to conclude the negotiations of the agreement, which, according to the plan, is to be signed on Tuesday.

The 25-man delegation will also have shipping-political negotiations with Chinese authorities. The purpose of the trip is also to strengthen the commercial collaboration between Chinese agents and Norwegian shipping companies.

One of the first posts in the official program takes place Monday when Olberg and service manager Jan Petter Burdahl at Tandberg A/S will deliver a Tandberg language laboratory to the vice minister in the Department for

Foreign Trade, Zheng Yi-Shan. Due to changes in China's foreign and trade policy, China's officials need to learn languages. The laboratory is very advanced, consisting of 10 different units. The installation took place in the days just before the arrival of the delegation.

Norwegian Expertise

During the last 10-15 years a long series of Norwegian companies have had contact with Chinese authorities and state companies to offer their products and expertise. One of them is Norcontrol in Horten, which a year ago received a contract for a training simulator for the navigation and the machine side of the Dairen maritime school in the port Dalien, east of Peking. The contract was for 9 million kroner. Director Ole Egil Strupe at Norcontrol, who participated in the delegation, tells AFTENPOSTEN that Norcontrol last week signed a contract for machine room automation equipment for three different ships. The contract amounts to 4 million kroner. Strupe hopes that this trip by the delegation will give results in the Chinese market, especially in view of equipment for ships and maritime schools. Shanghai Marine College is specially of interest in this connection. Traffic monitoring and offshore are also areas where Norcontrol wants to stand out.

Different Interests

Both with regard to shipping equipment, shipbuilding, maritime research and consultant services the various members of the delegation have given an extensive survey of the services which can be offered. In addition to Eksportfinans, the delegation has representatives for Norconsult, Barber Wilhelmsen Agencies Ltd., Bugge Supply Ships, A/S Haanes Rederi, A/S Kristian Jebsens Rederi, Oyvind Lorentzen A/S Sobral, Lorentzens Skibs A/S, R. S. Platou, Helmer Staubo & Co., Anders Wilhemsen & Co. and the Aker Group. It is hoped that the negotiations will go further than to the general orientations, that they will also lead to discussions of concrete projects or inquiries about projects which the Chinese believe will be suitable for Chinese-Norwegian cooperation.

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FOREIGN TRADE

BRIEFS

EXPORTS TO HONG KONG--China is charging Hong Kong more for its exports to finance its four modernisations and this is affecting the local economy, Sir Philip /Haddon-Cave, Hong Kong financial secretary/ said. The prices China charges for its exports were set at or below world prices and were generally more stable than world prices up to the early 1970s. "However, more recently--indeed, since the floating of the Hong Kong dollar--there has been a tendency for the prices to move up to and in line with world prices," he said. "This is only to be expected given China's increasing emphasis on maximising foreign exchanges in order to finance its four modernisations programme but it has become a new factor in our situation." He did not produce figures on the increased charges but 17.6 per cent of Hong Kong's imports worth $85,837 million last year came from China. About 45 per cent of total foodstuff imports of $9,968 million was from China. "Retained imports from China represent even today about 2.5 times the value of re-exports of China origin," Sir Philip said. And these came to 28.3 per cent of Hong Kong's total re-exports last year. /Excerpts/ /Hong Kong SOUTH CHINA MORNING POST in English 28 Feb 80 p 8/

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END

SELECTIVE LIST OF JPRS SERIAL REPORTS

CHINA SERIAL REPORTS

CHINA REPORT: Agriculture
CHINA REPORT: Economic Affairs
CHINA REPORT: Plant and Installation Data
CHINA REPORT: Political, Sociological and Military Affairs
CHINA REPORT: RED FLAG*
CHINA REPORT: Science and Technology

WORLDWIDE SERIAL REPORTS

WORLDWIDE REPORT: Environmental Quality
WORLDWIDE REPORT: Epidemiology
WORLDWIDE REPORT: Law of the Sea
WORLDWIDE REPORT: Nuclear Development and Proliferation
WORLDWIDE REPORT: Telecommunications Policy, Research and Development

*Cover-to-cover

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